RCD-W500C

SERVICE MANUAL

US Model
Canadian Model

Ver 1.2 2004. 08

Self Diagnosis Supported model

CD Section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM53L-30B61M
	Base Unit Type	BU-30BBD61M
	Optical Pick-up Type	A-MAX.4T
CD-R/CD-RW Section	Model Name Using Similar Mechanism	RCD-W100
	CD Mechanism Type	CDM65-RBD2
	Base Unit Type	RBD2
	Optical Pick-up Type	KRM-220CAA

SPECIFICATIONS

DECK A (the CD player section)

System	Compact disc digital audio system
Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Playable discs	CD, CD-R, CD-RW
Frequency response	20 Hz – 20,000 Hz (±0.5 dB)
Signal to Noise Ratio	Over 98 dB during play
Wow and flutter	Below measurable limit

DECK B (the CD-R and CD-RW recording section)

System	Compact disc digital audio system
Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Playable discs	CD, CD-R, CD-RW
Recordable discs	CD-R, CD-RW (for Audio)
Frequency response	20 Hz - 20,000 Hz (±0.5 dB)
Signal to Noise Ratio	Over 98 dB during play
Wow and flutter	Below measurable limit

Inputs

ANALOG IN (Phono jacks)	Impedance: 47 kilohms Rated input: 500 mVrms Minimum input: 250 mVrms
DIGITAL OPTICAL IN (Square optical connector jack)	Optical wavelength: 660 nm

Outputs

ANALOG OUT (Phono jacks)	Rated output: 2 Vrms Load impedance: over 10 kilohms
DIGITAL OPTICAL OUT (Square optical connector jack)	Wavelength: 660 nm Rated output: –18 dBm
PHONES (Stereo phone jack)	Load impedance: 32 ohms Rated output: 12mW

General

Power requirements	120 V AC, 60 Hz
Power consumption	25 W
Dimensions (approx.) (w/h/d) incl. projecting parts and control	430 × 108 × 399 mm (17 × 4 3/8 × 15 3/4 inch)
Mass (approx.)	6.8 kg (15 lbs)

Supplied accessories

- Audio connecting cords
  Phono plug × 2 (red/white) ⟷ Phono plug × 2 (red/white) (2)
- Remote commander (remote) (1)
- R6 (size AA) batteries (2)

Design and specifications are subject to change without notice.

COMPACT DISC RECORDER

9-877-447-03
2004H16-1
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Sony Corporation
Audio Group
Published by Sony Engineering Corporation

SONY®

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!
LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer: Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.

2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

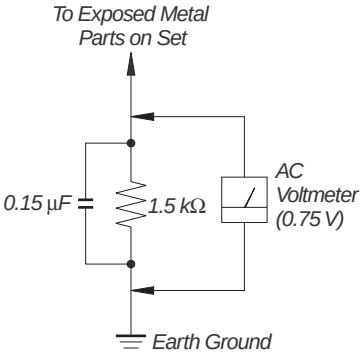
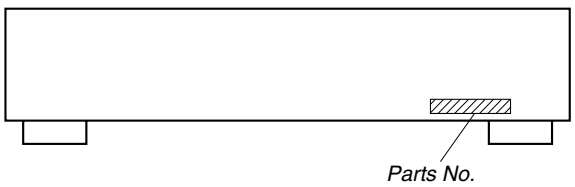


Fig. A. Using an AC voltmeter to check AC leakage.

MODEL IDENTIFICATION
— BACK PANEL —



PARTS No.	MODEL
4-246-074-0☐	US
4-246-074-1☐	Canadian

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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Self-diagnosis Function

When the self-diagnosis function is activated to prevent the player from malfunctioning, three character service numbers in a combination with a message appears in the display. In this case, check the following table.

Message	Explanation
C12/ Cannot Copy	You are trying to record a disc that cannot be played back in DECK-A or with an external device, such as CD-ROM or VIDEO CD. • Remove the disc, and then insert a music CD for playback.
C13/ Rec Error	Recording has not been completed successfully because of vibration. • Relocate the unit in a place free of vibration and restart the recording again.
	The disc you try to record is excessively dirty (such as oil-stained or finger marked) or scratched. Or the disc is not normal. • Replace the disc with another one and restart the recording again.
C14/ TOC Error	The unit did not read the TOC information. • Insert other discs.
C41/ Cannot Copy	The sound source you are trying to record is a copy of a commercial music software. Or you are trying to record on a CD-R/CD-RW digitally. • Because of the restriction of the Serial Copy Management System, you cannot record a copy of a commercial music software. Neither can you record a CD-R/CD-RW digitally.
C71/ Din Unlock	If this message is displayed momentarily, this is not an error. It is caused by the digital signal during recording.
	During recording of a digital sound source, the connecting cable has been disconnected or the player of the sound source has turned off. • Connect the cable or turn on the digital player.

SECTION 1
SERVICING NOTE

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repain parts.
The flexible board is easily damaged and should be handled with care.

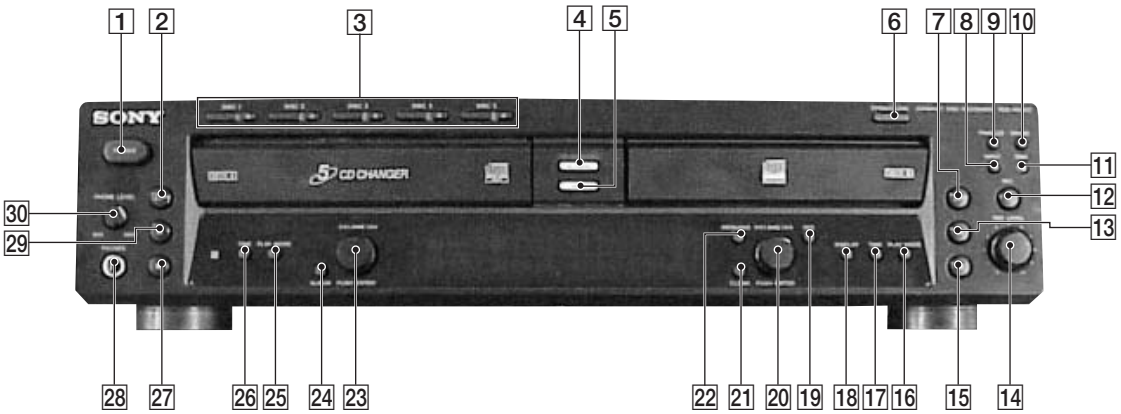
NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.
The emission check enables continuous checking of the S curve.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the “S curve check” in “CD section adjustment” and check that the S curve waveform is output three times.

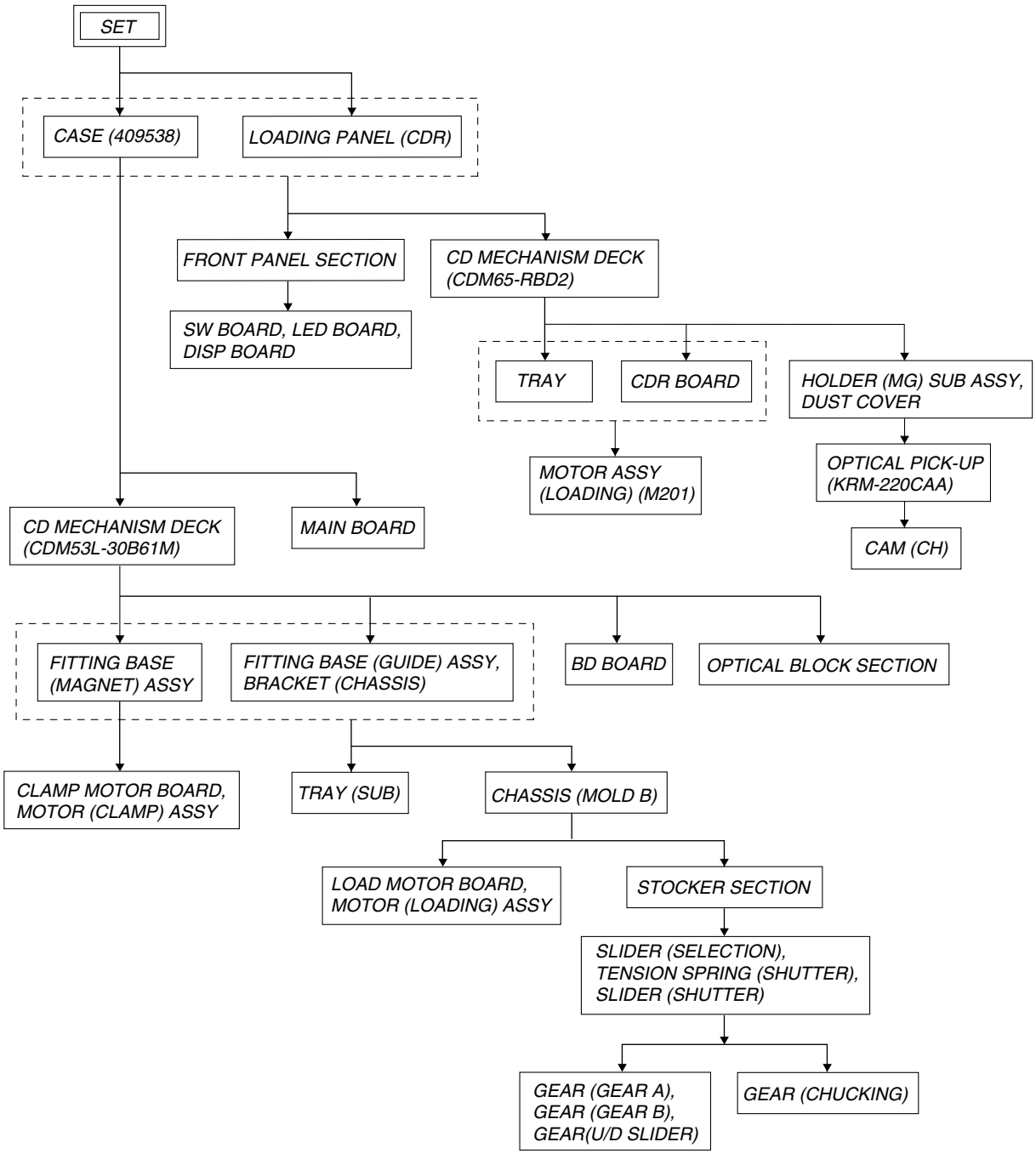
SECTION 2
GENERAL



1 POWER button
2 ▷ button
3 DISC 1 to DISC 5 ⏏ button and indicators
4 CD SYNCHRO NORMAL button
5 CD SYNCHRO HIGH button
6 OPEN/CLOSE button
7 ▷ button
8 INPUT button
9 FINALIZE button
10 ERASE button
11 SBM button and indicator
12 REC ● button
13 ❚❚ button
14 REC LEVEL knob
15 ■ button
16 PLAY MODE button
17 TIME button
18 DISPLAY button
19 YES button
20 ⏮ AMS ⏭ knob
21 CLEAR button
22 MENU/NO button
23 ⏮ AMS ⏭ knob
24 ALBUM button
25 PLAY MODE button
26 TIME button
27 ■ button
28 PHONES jack
29 ❚❚ button
30 PHONE LEVEL knob

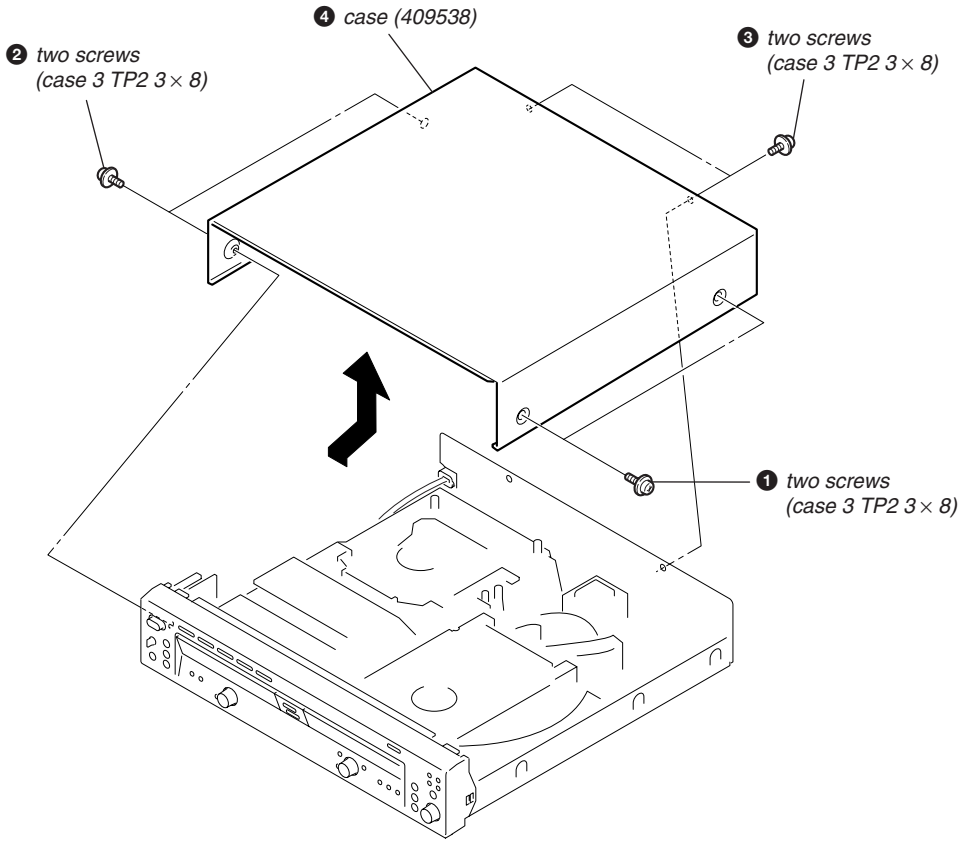
SECTION 3
DISASSEMBLY

Note : • Disassemble the unit in the order as shown below.
• This set can be disassemble according to the following sequence.
The dotted square with arrow (⬚⊢) prompts you to move to the next job when all of the works within the dotted square (⬚) are completed.

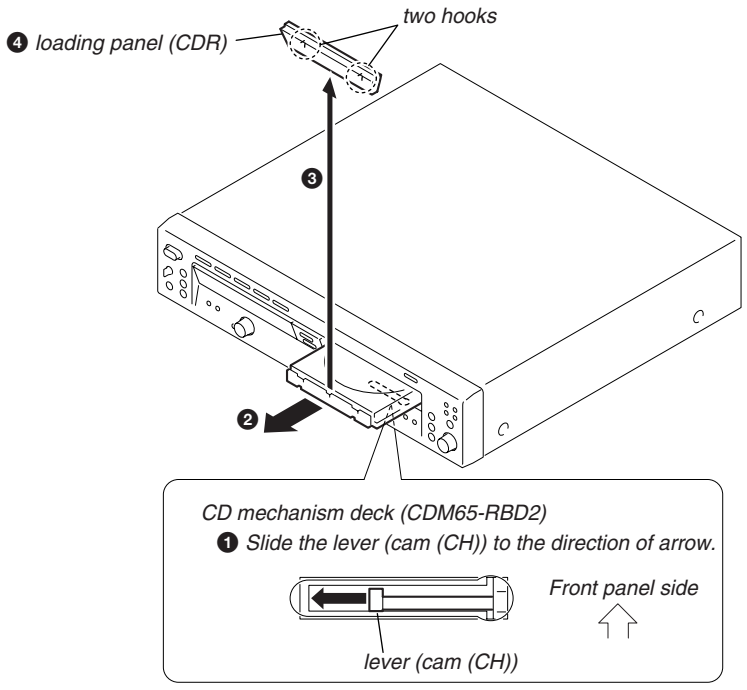


Note : Follow the disassembly procedure in the numerical order given.

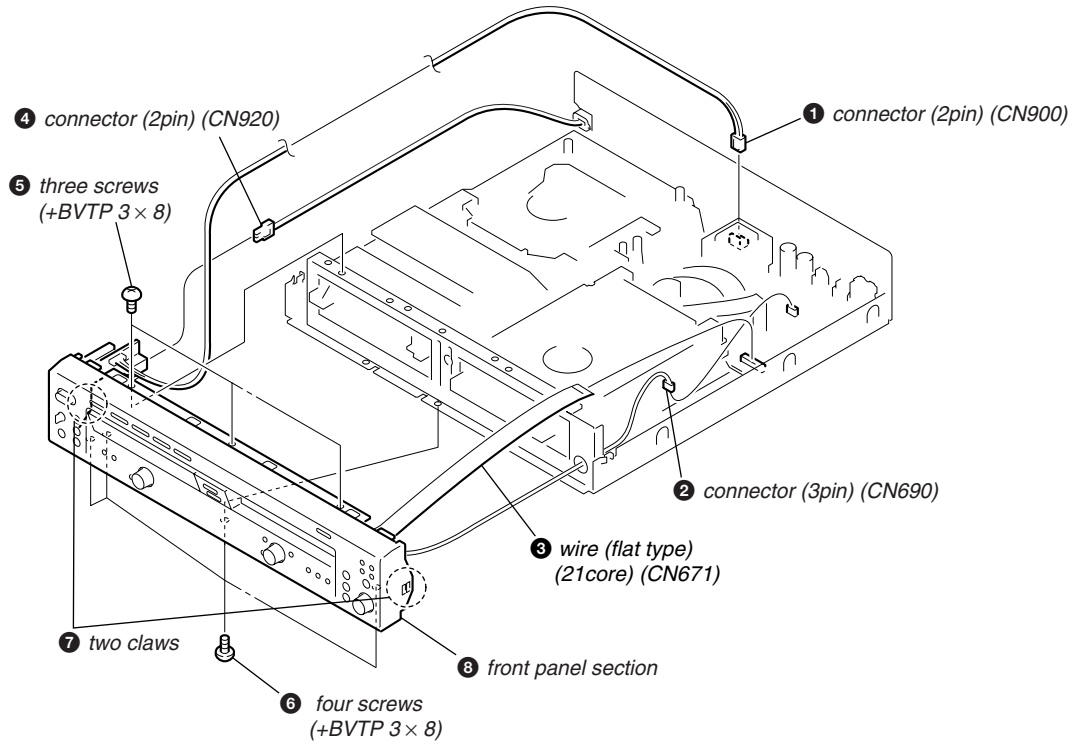
3-1. Case (409538)



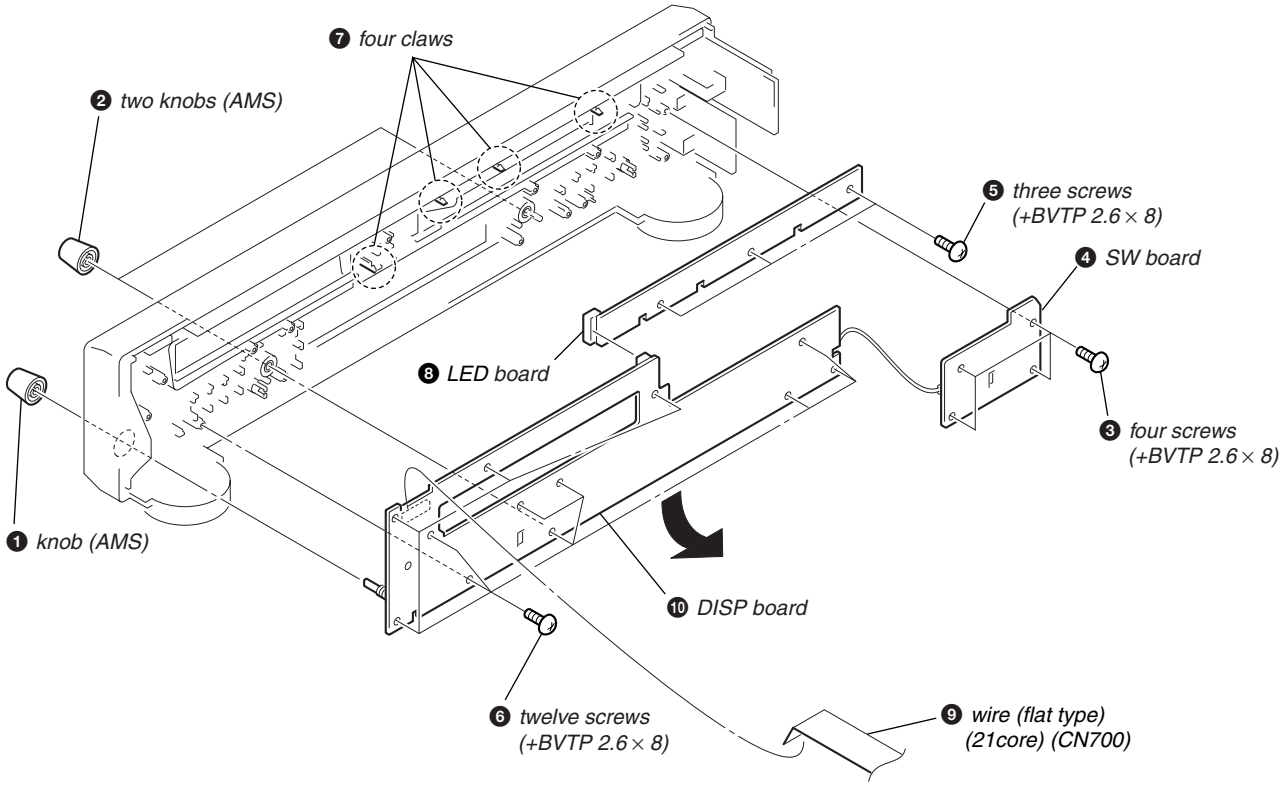
3-2. Loading Panel (CDR)



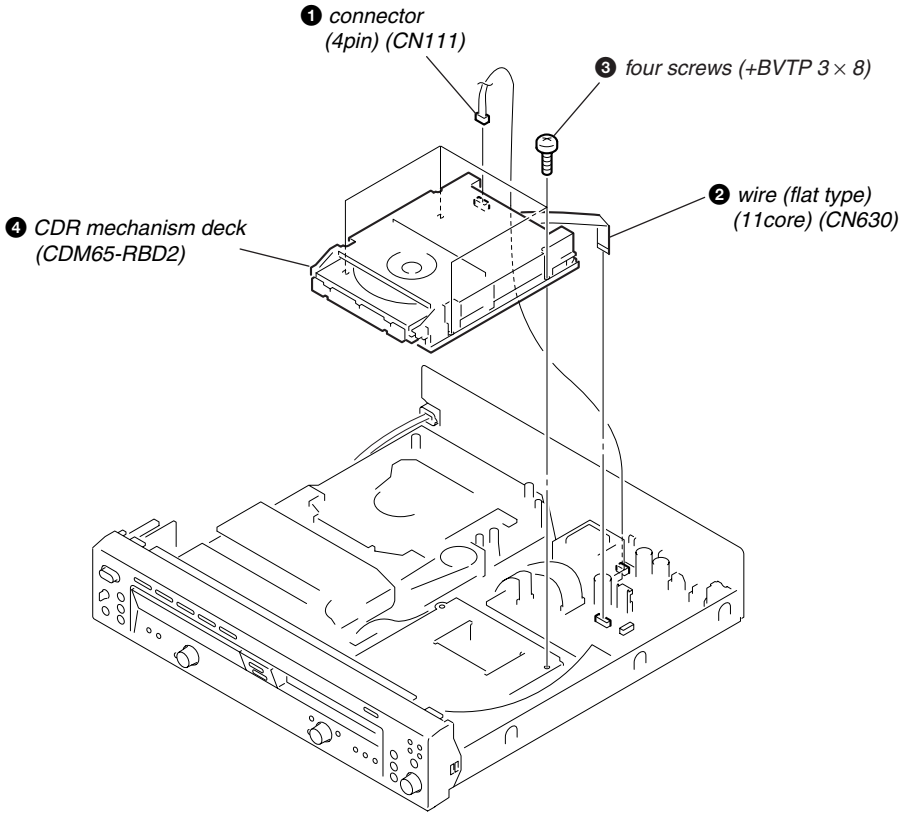
3-3. Front Panel Section


❹ connector (2pin) (CN920)
❶ connector (2pin) (CN900)
❺ three screws (+BVTP 3× 8)
❷ connector (3pin) (CN690)
❸ wire (flat type) (21core) (CN671)
❼ two claws
❽ front panel section
❻ four screws (+BVTP 3× 8)

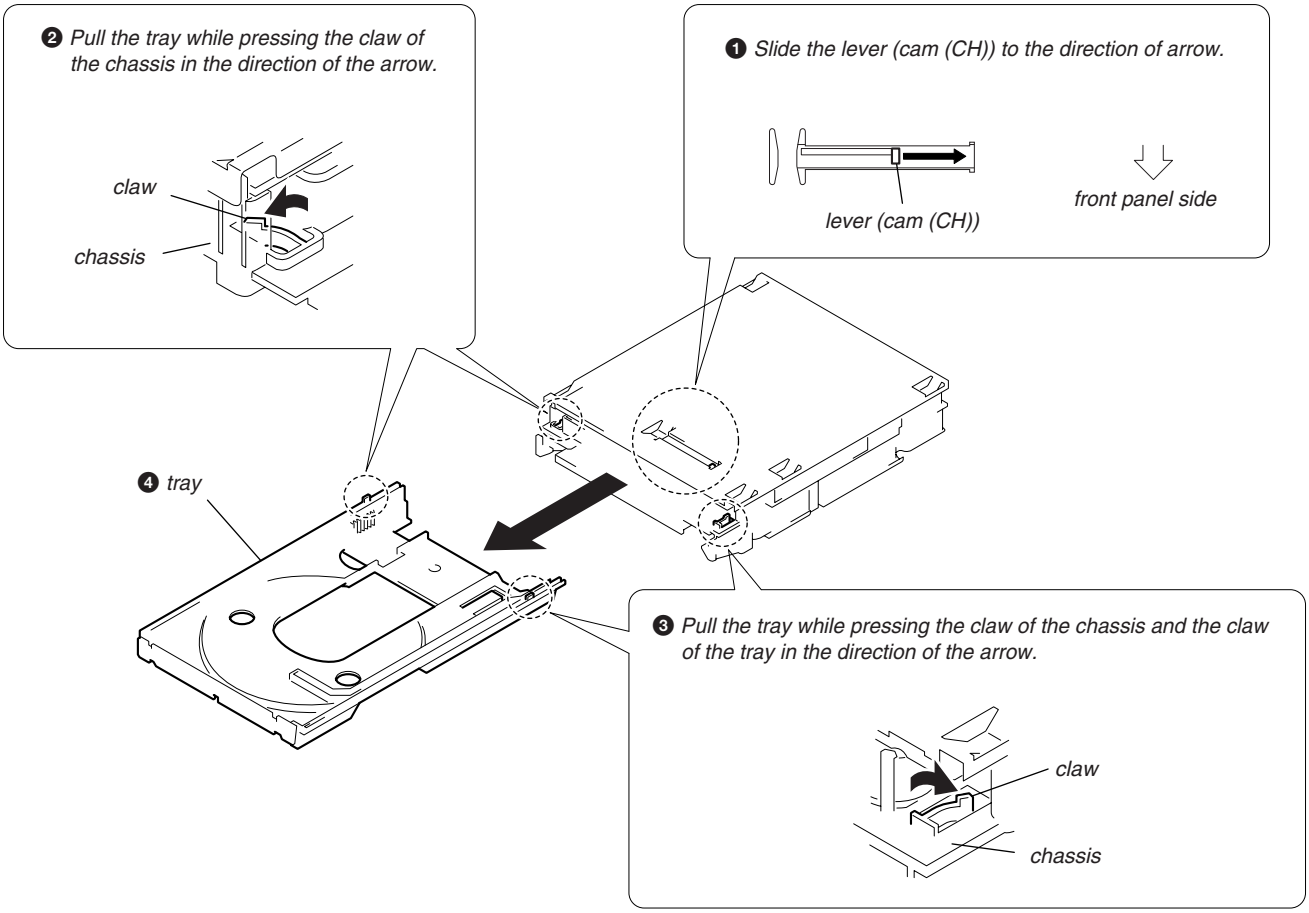
3-4. SW Board, LED Board, DISP Board


❼ four claws
❷ two knobs (AMS)
❺ three screws (+BVTP 2.6× 8)
❹ SW board
❽ LED board
❸ four screws (+BVTP 2.6× 8)
❶ knob (AMS)
❿ DISP board
❻ twelve screws (+BVTP 2.6× 8)
❾ wire (flat type) (21core) (CN700)

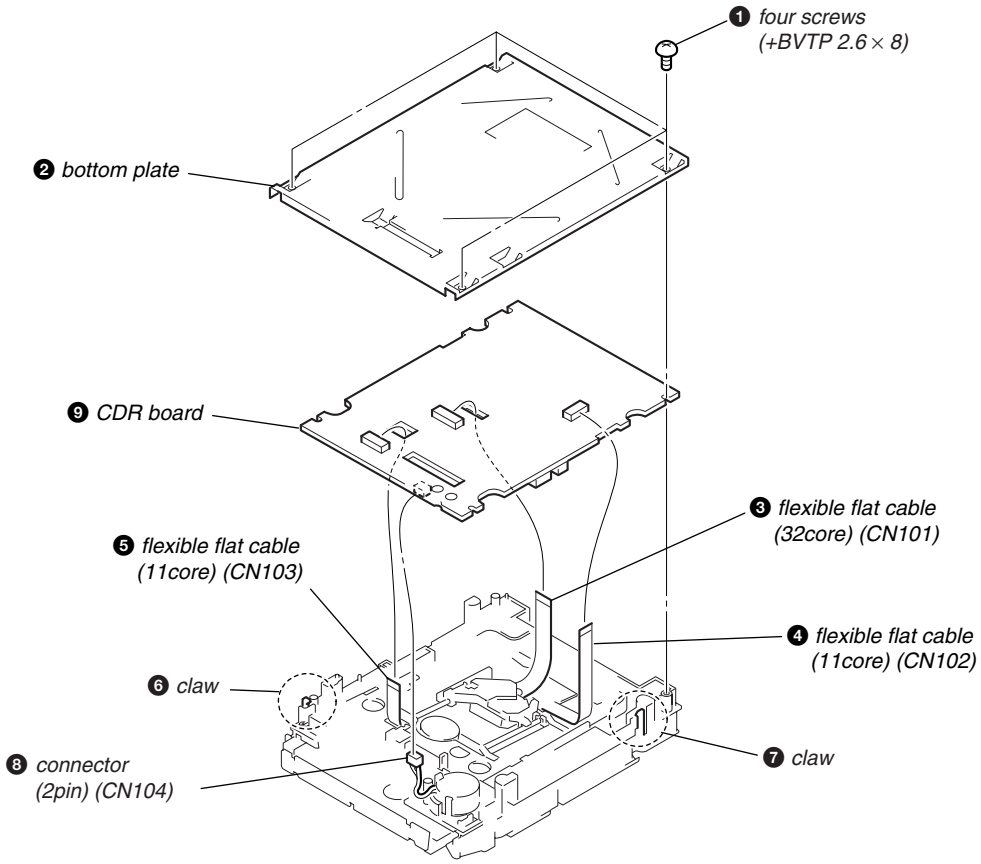
3-5. CD Mechanism Deck (CDM65-RBD2)



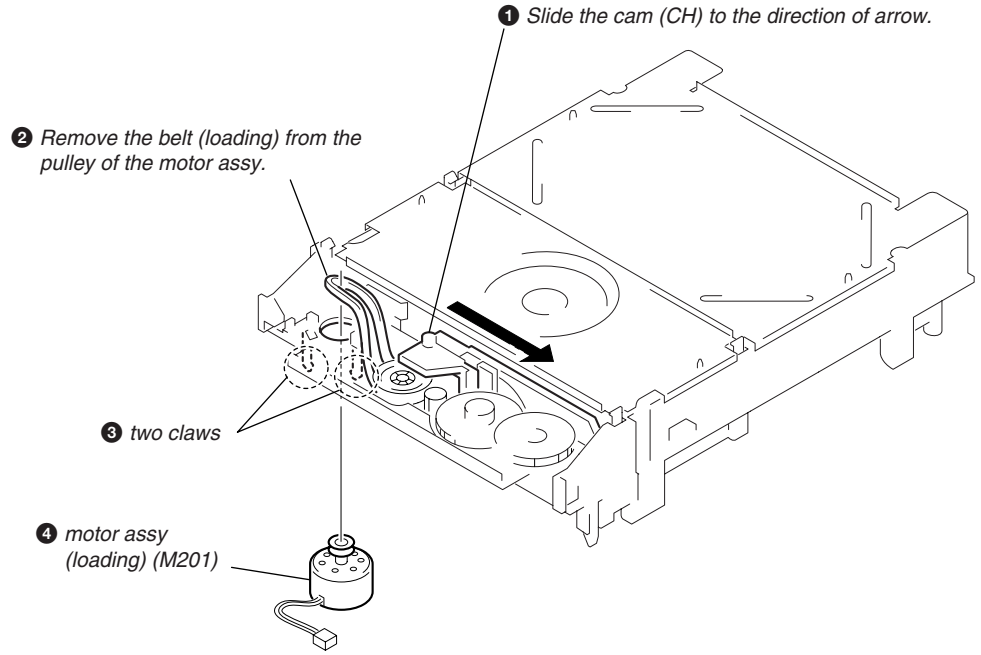
3-6. Tray


❷ Pull the tray while pressing the claw of the chassis in the direction of the arrow.
claw
chassis
❶ Slide the lever (cam (CH)) to the direction of arrow.
lever (cam (CH))
front panel side
❹ tray
❸ Pull the tray while pressing the claw of the chassis and the claw of the tray in the direction of the arrow.
claw
chassis

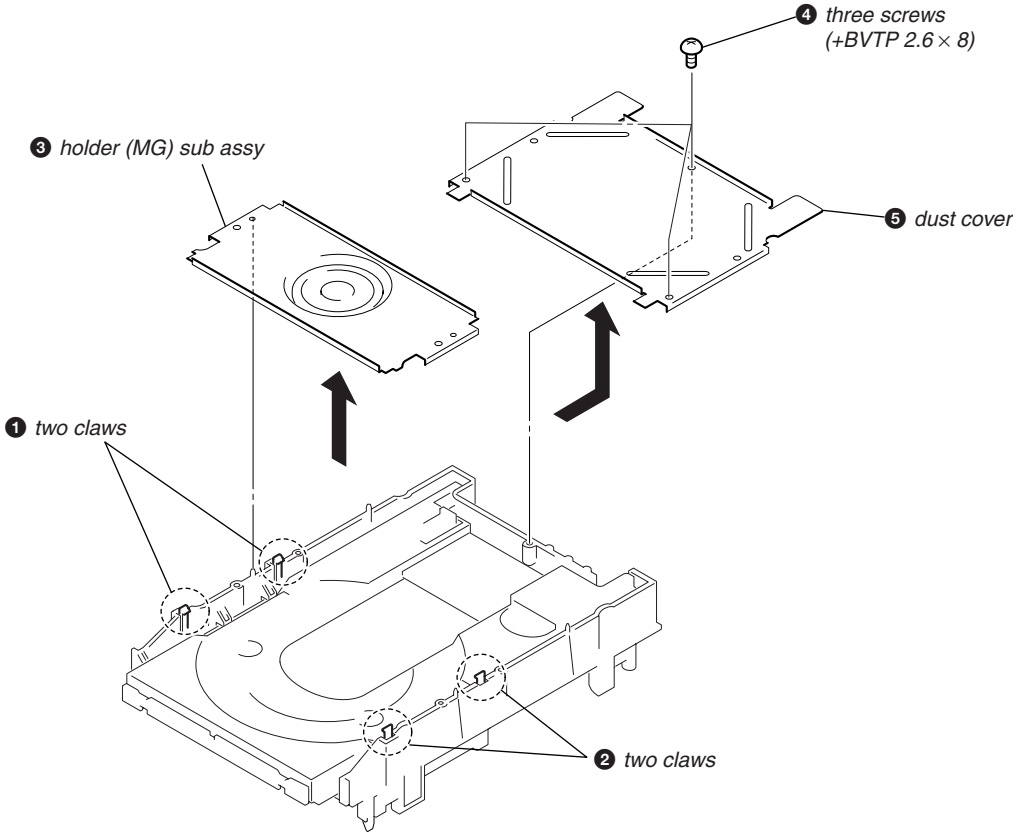
3-7. CDR Board



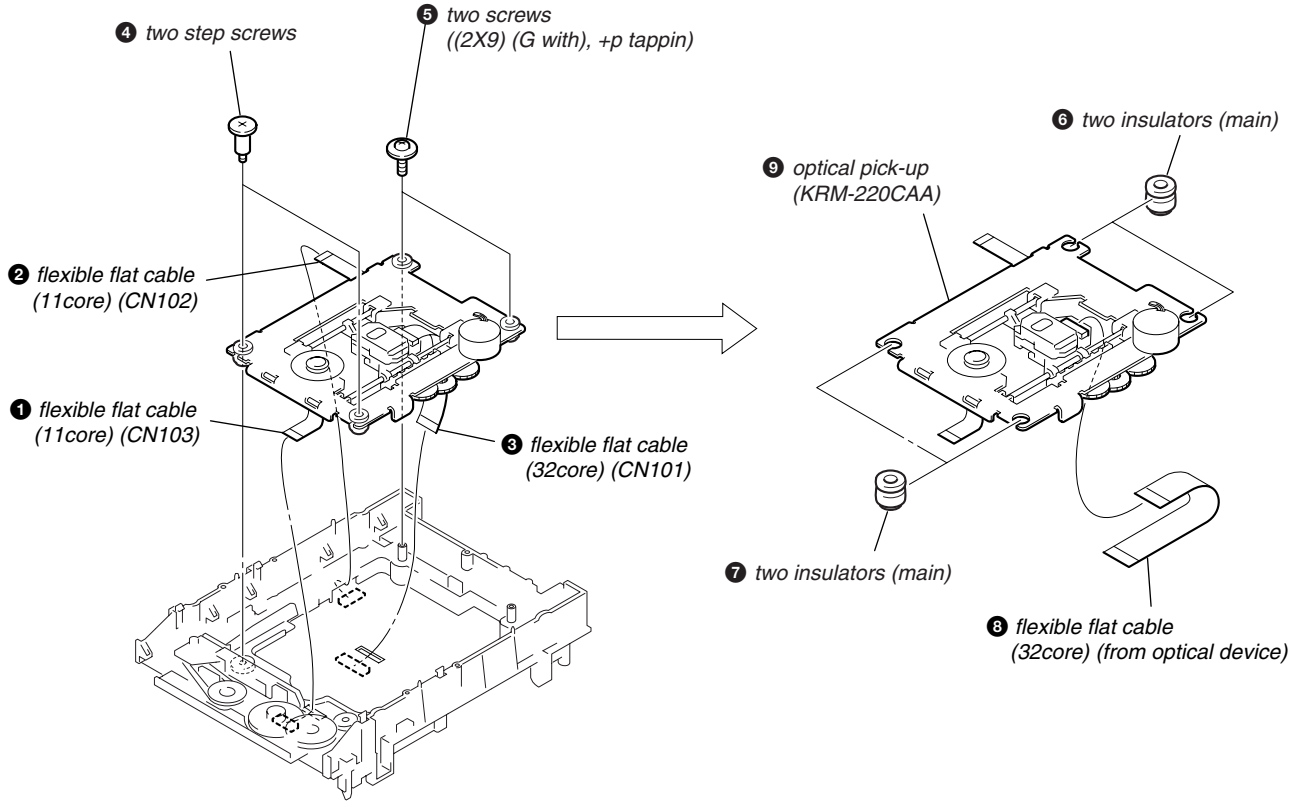
3-8. Motor Assy (Loading) (M201)


❶ Slide the cam (CH) to the direction of arrow.
❷ Remove the belt (loading) from the
pulley of the motor assy.
❸ two claws
❹ motor assy
(loading) (M201)

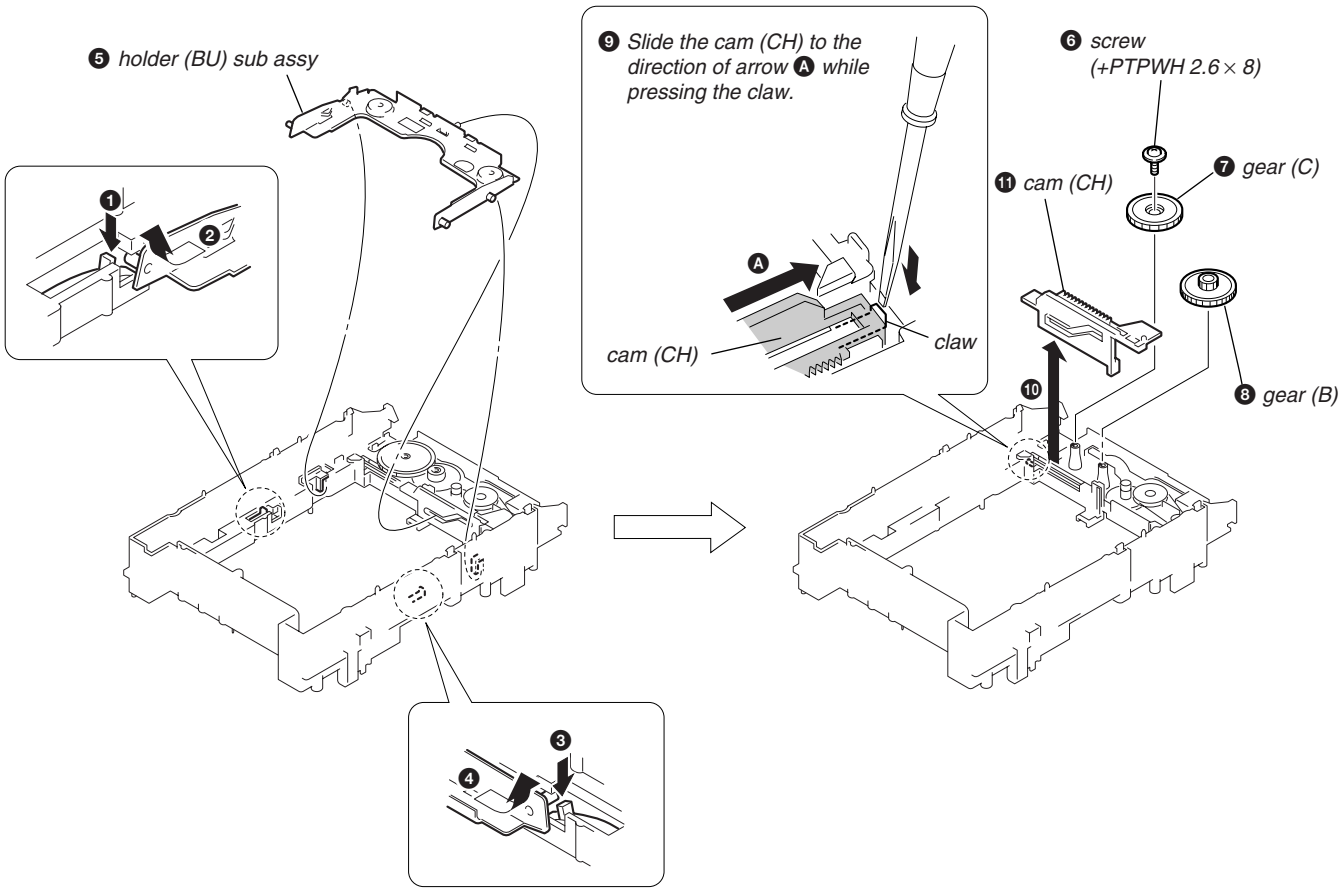
3-9. Holder (MG) Sub Assy, Dust Cover



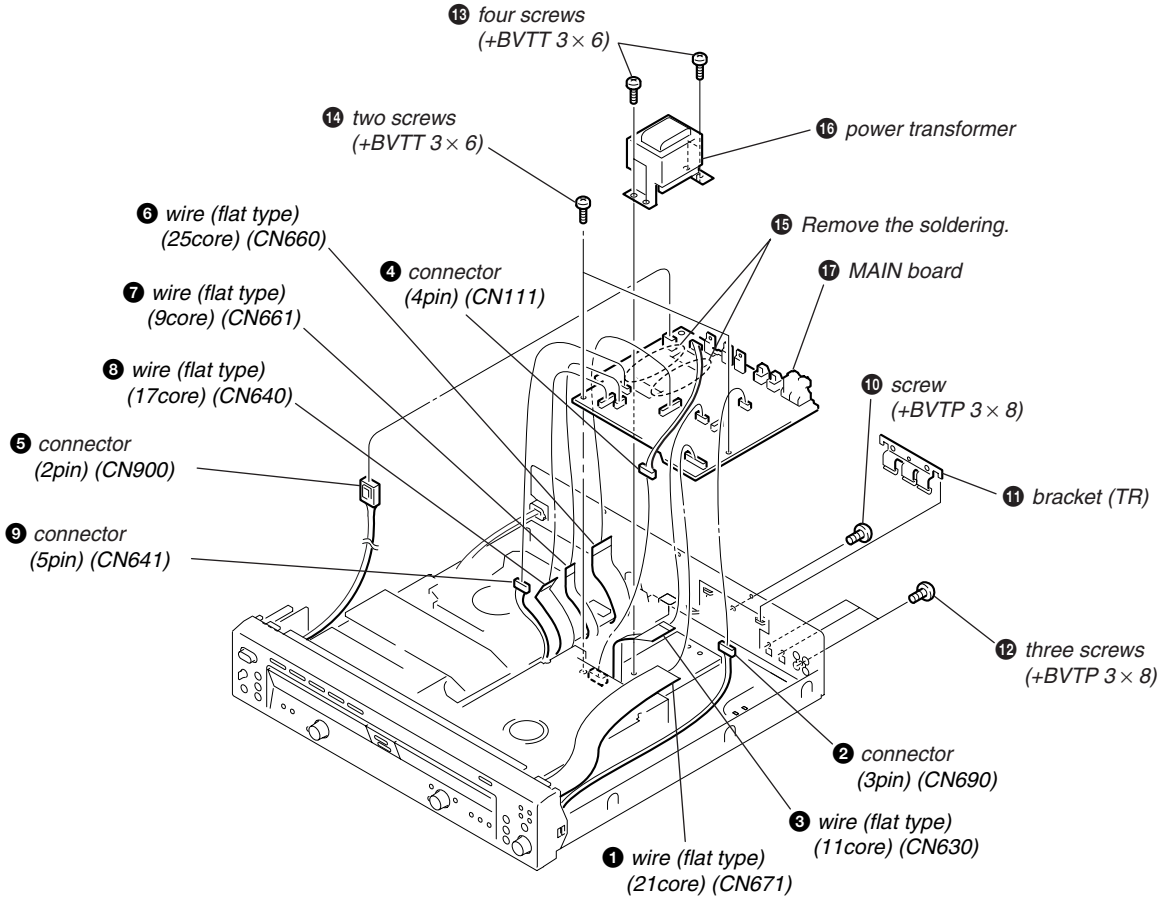
3-10. Optical Pick-Up (KRM-220CAA)



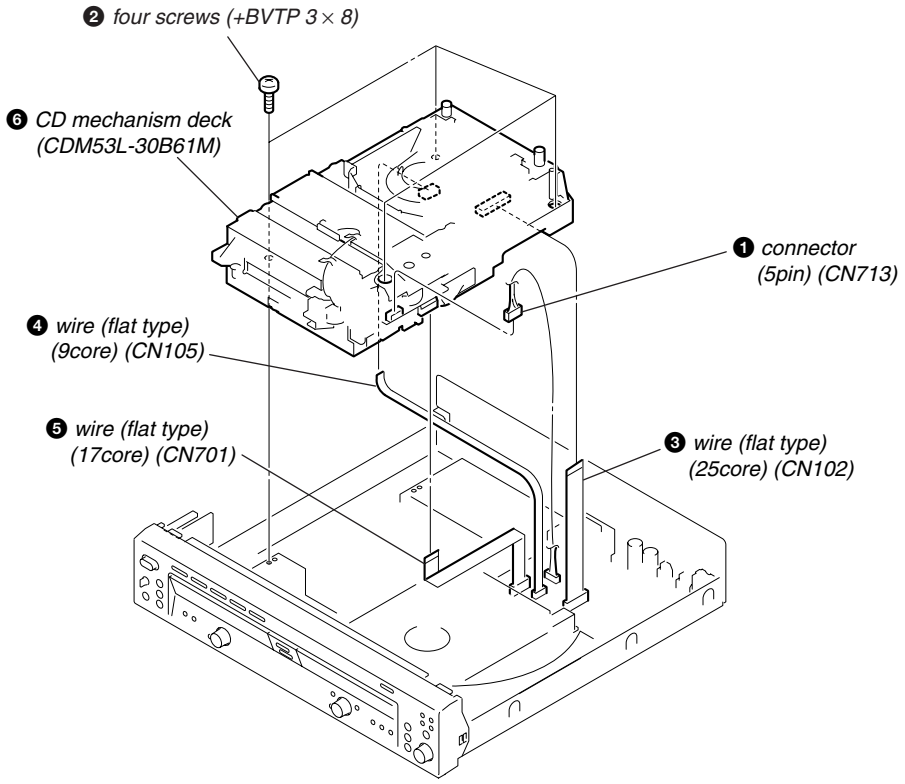
3-11. Cam (CH)



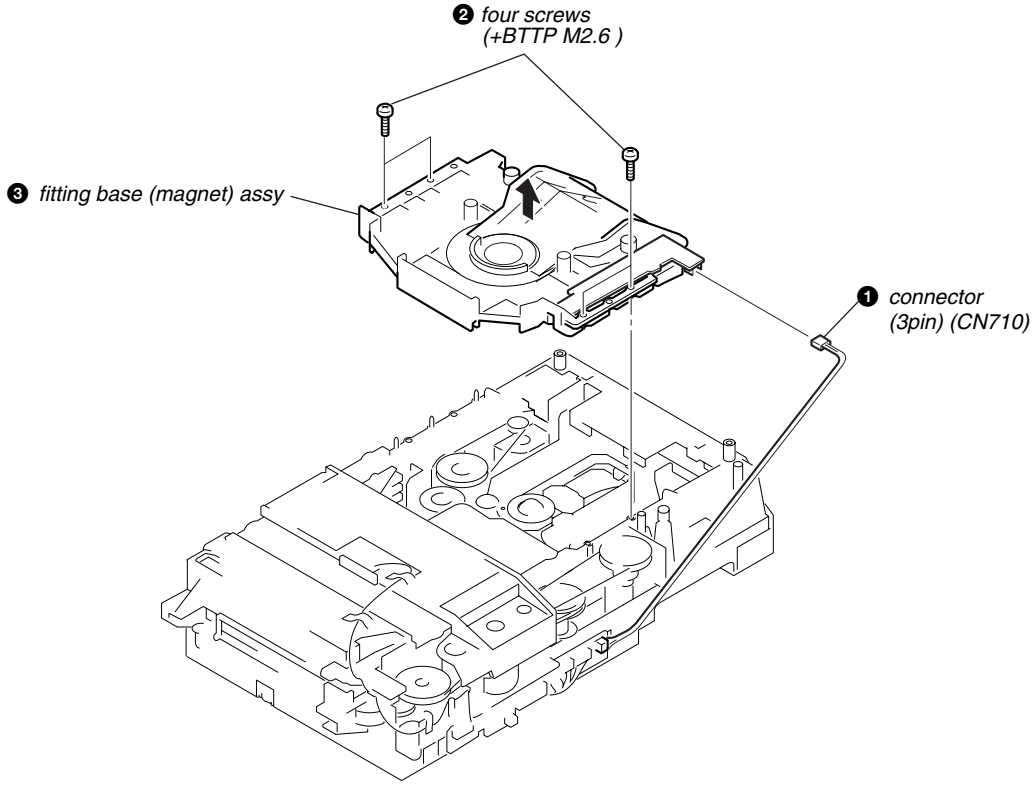
3-12. MAIN Board


⓭ four screws (+BVTT 3× 6)
⓮ two screws (+BVTT 3× 6)
⓰ power transformer
❻ wire (flat type) (25core) (CN660)
⓯ Remove the soldering.
❹ connector (4pin) (CN111)
⓱ MAIN board
❼ wire (flat type) (9core) (CN661)
❽ wire (flat type) (17core) (CN640)
❿ screw (+BVTP 3× 8)
❺ connector (2pin) (CN900)
⓫ bracket (TR)
❾ connector (5pin) (CN641)
⓬ three screws (+BVTP 3× 8)
❷ connector (3pin) (CN690)
❸ wire (flat type) (11core) (CN630)
❶ wire (flat type) (21core) (CN671)

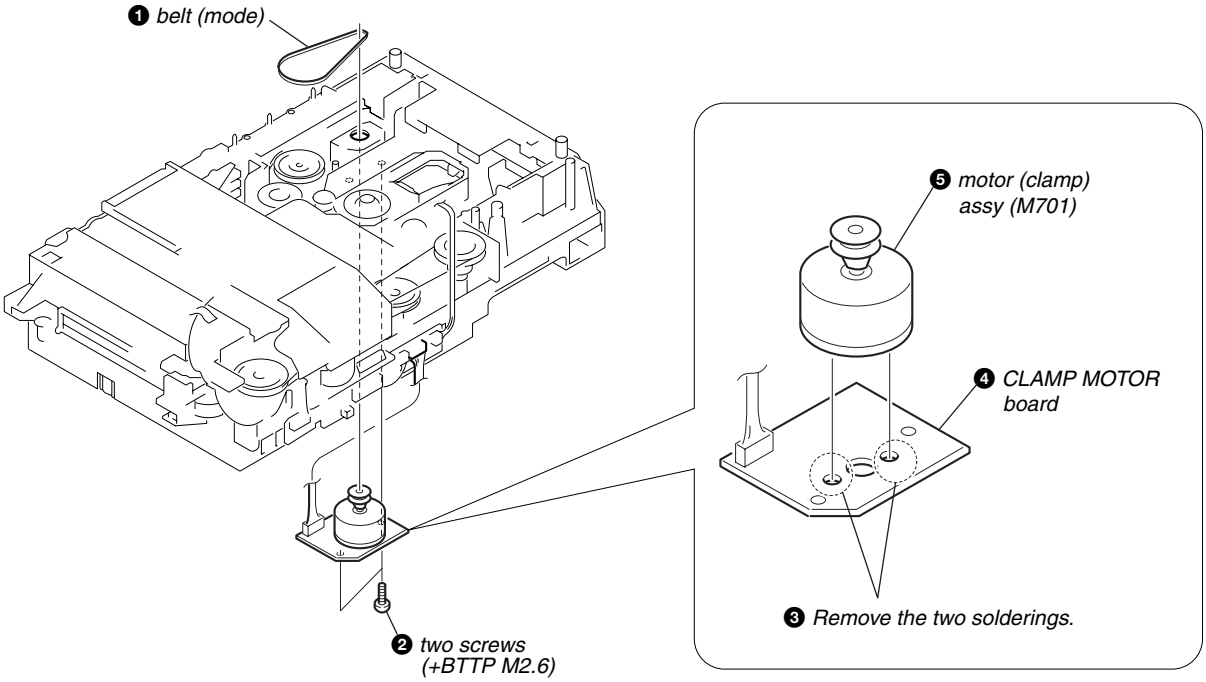
3-13. CD Mechanism Deck (CDM53L-30B61M)


❷ four screws (+BVTP 3 × 8)
❻ CD mechanism deck (CDM53L-30B61M)
❶ connector (5pin) (CN713)
❹ wire (flat type) (9core) (CN105)
❺ wire (flat type) (17core) (CN701)
❸ wire (flat type) (25core) (CN102)

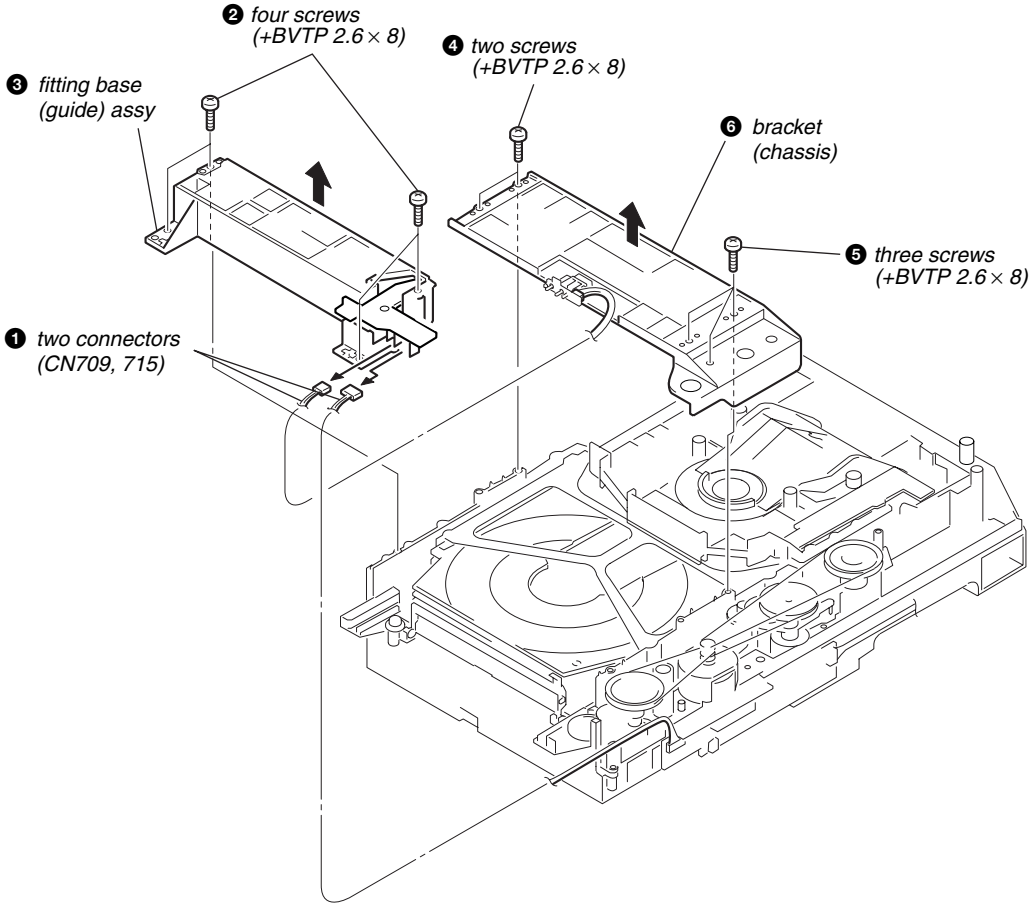
3-14. Fitting Base (Magnet) Assy



3-15. CLAMP MOTOR Board, Motor (Clamp) Assy (M701)

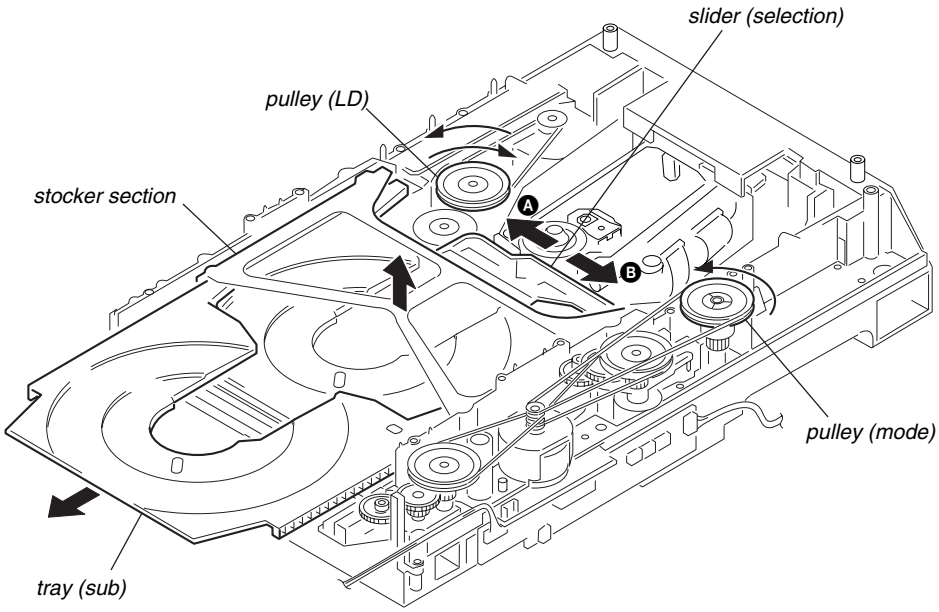


3-16. Fitting Base (Guide) Assy, Bracket (Chassis)


❷ four screws (+BVTP 2.6 × 8)
❹ two screws (+BVTP 2.6 × 8)
❸ fitting base (guide) assy
❻ bracket (chassis)
❺ three screws (+BVTP 2.6 × 8)
❶ two connectors (CN709, 715)

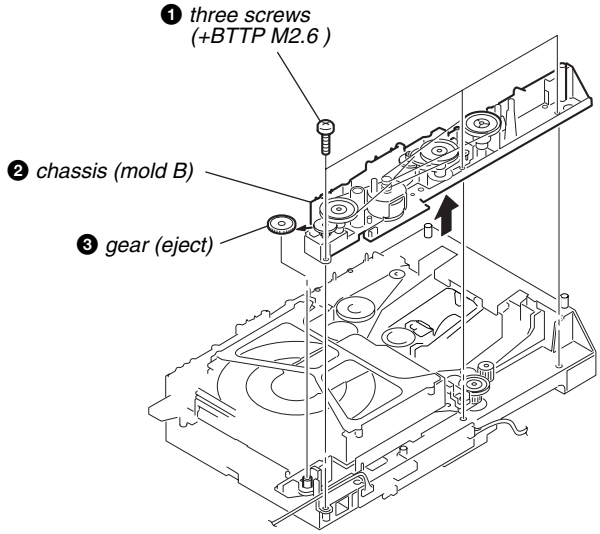
3-17. Tray (Sub)

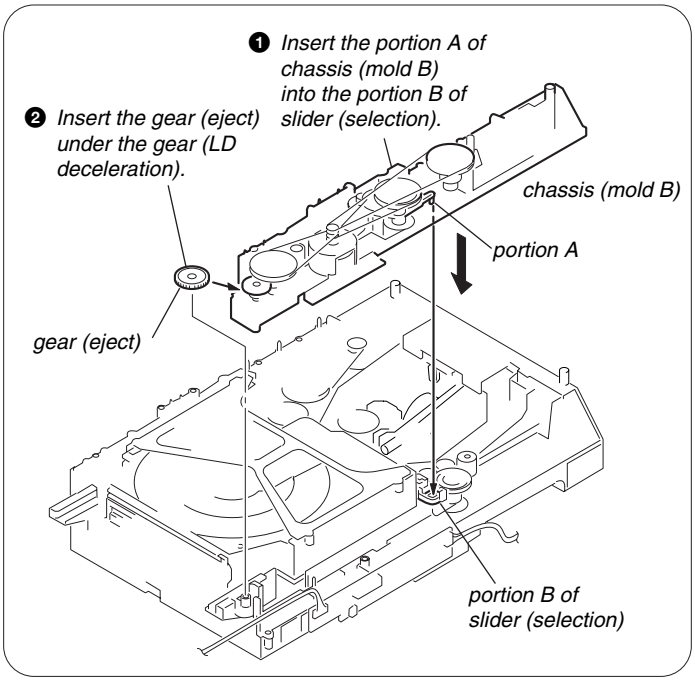
❶ *Rotating the pulley (LD), shift the slider (selection) in the arrow Ⓐ direction.*
❷ *Rotating the pulley (mode) in the arrow direction, adjust the tray (sub) to be removed.*
❸ *Rotating the pulley (LD), shift the slider (selection) in the arrow Ⓑ direction.*
❹ *Rotating the pulley (mode) in the arrow direction, remove the tray (sub) to be removed.*



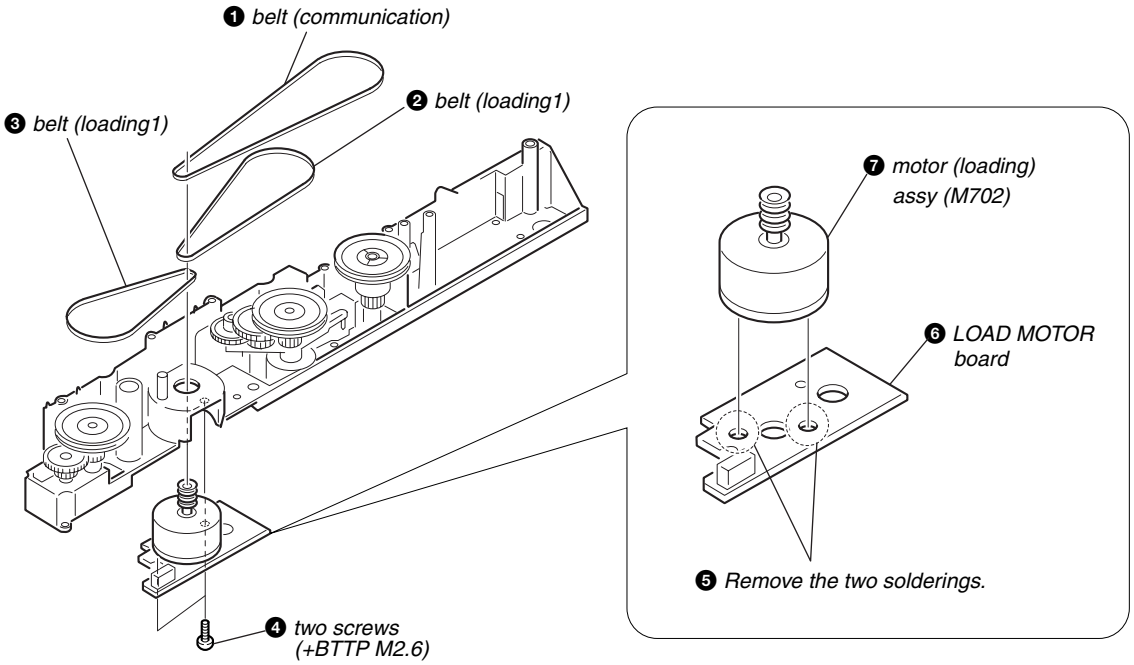
3-18. Chassis (Mold B)

PRECAUTION DURING CHASSIS (MOLD B) INSTALLATION

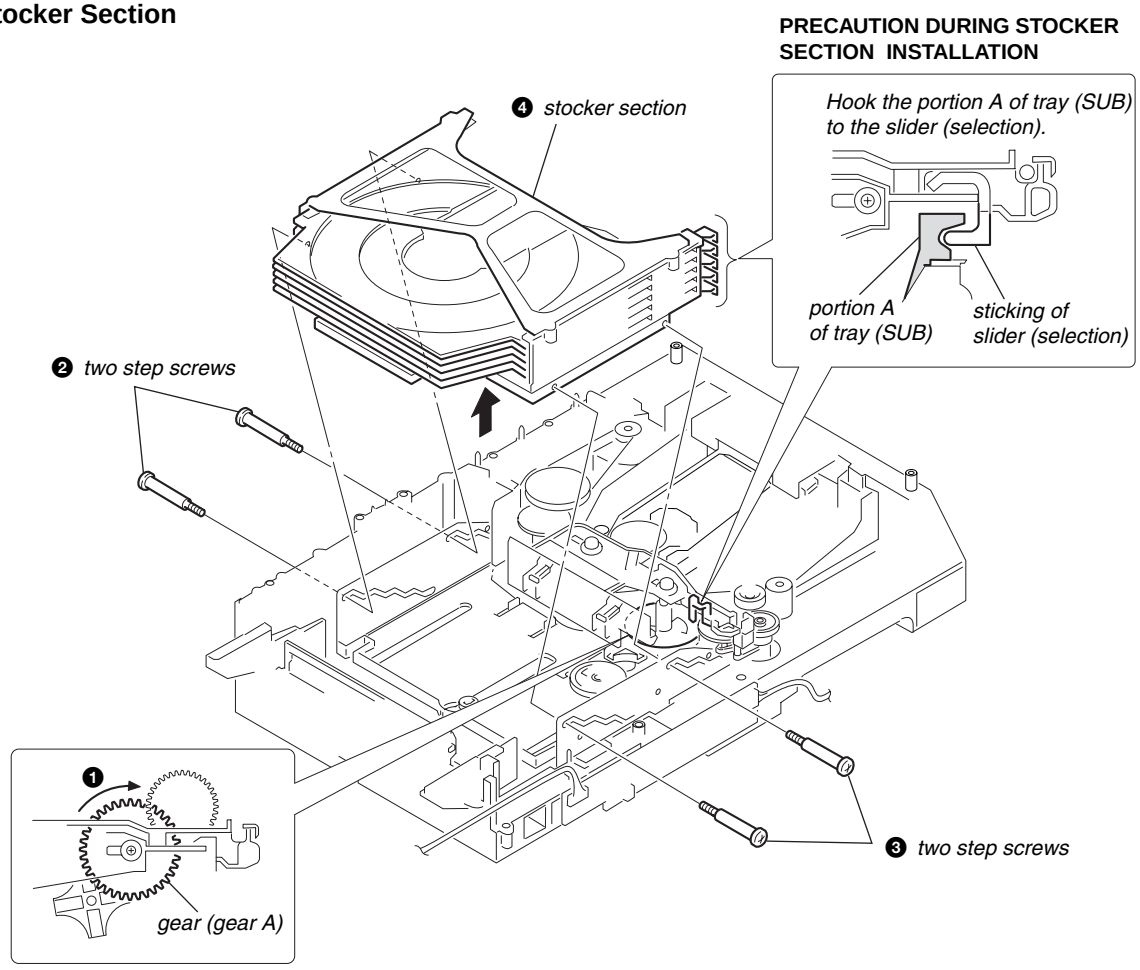



❶ Insert the portion A of chassis (mold B) into the portion B of slider (selection).
❷ Insert the gear (eject) under the gear (LD deceleration).
chassis (mold B)
portion A
gear (eject)
portion B of slider (selection)

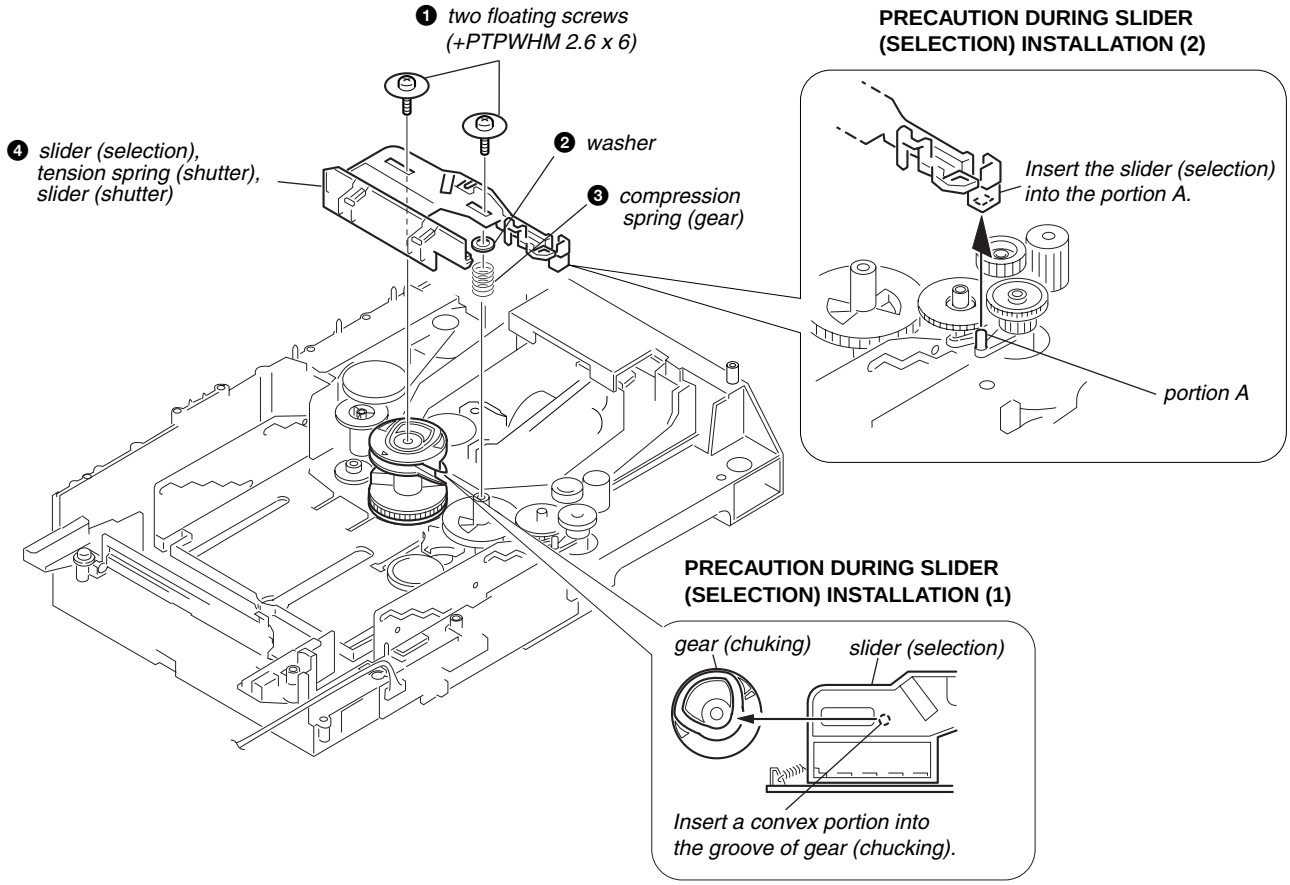
3-19. LOAD MOTOR Board, Motor (Loading) Assy (M702)


❶ belt (communication)
❷ belt (loading1)
❸ belt (loading1)
❼ motor (loading) assy (M702)
❻ LOAD MOTOR board
❺ Remove the two solderings.
❹ two screws (+BTTP M2.6)

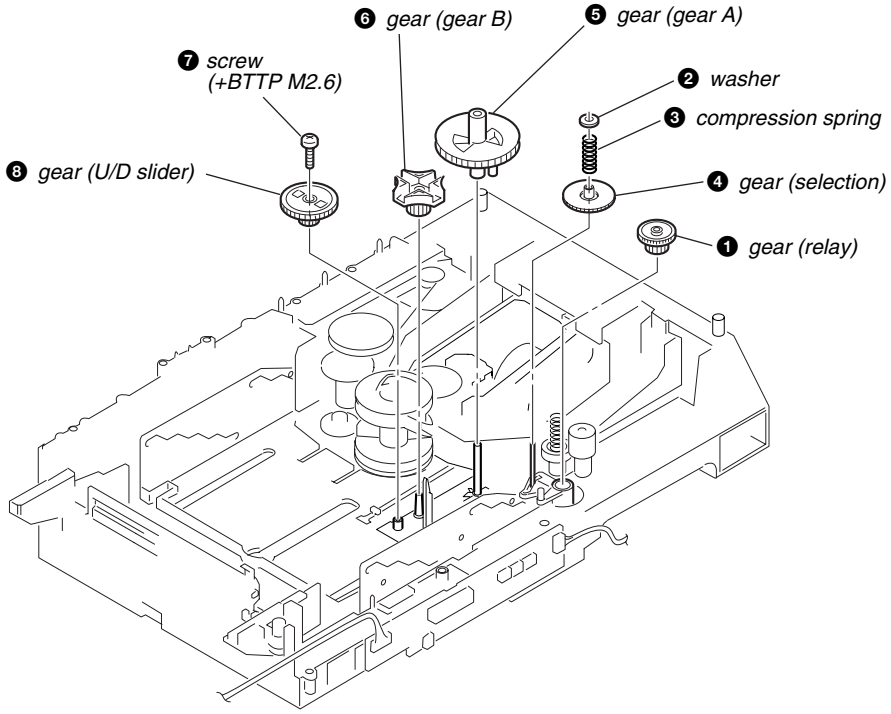
3-20. Stocker Section


PRECAUTION DURING STOCKER SECTION INSTALLATION
Hook the portion A of tray (SUB) to the slider (selection).
portion A of tray (SUB)
sticking of slider (selection)
❹ stocker section
❷ two step screws
❸ two step screws
❶
gear (gear A)

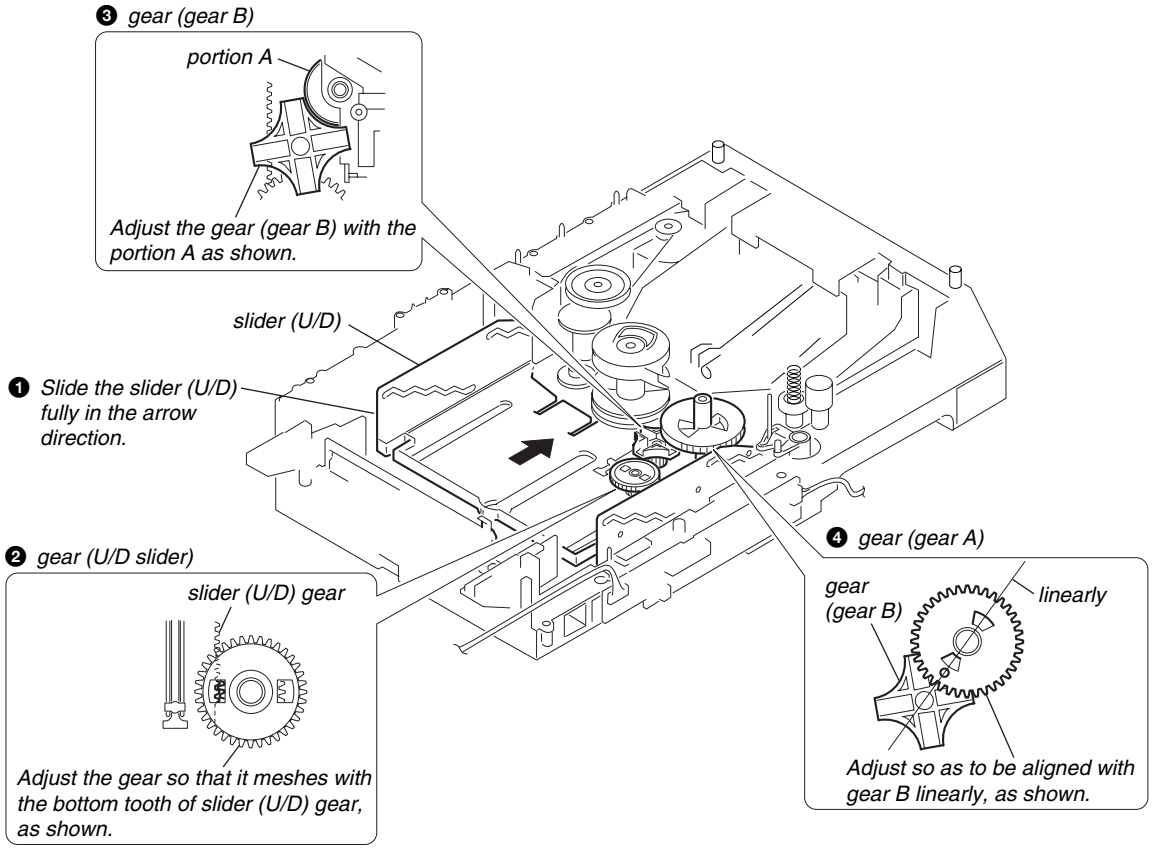
3-21. Slider (Selection), Tension Spring (Shutter), Slider (Shutter)


❶ two floating screws (+PTPWHM 2.6 x 6)
❷ washer
❸ compression spring (gear)
❹ slider (selection), tension spring (shutter), slider (shutter)
PRECAUTION DURING SLIDER (SELECTION) INSTALLATION (2)
Insert the slider (selection) into the portion A.
portion A
PRECAUTION DURING SLIDER (SELECTION) INSTALLATION (1)
gear (chuking)
slider (selection)
Insert a convex portion into the groove of gear (chucking).

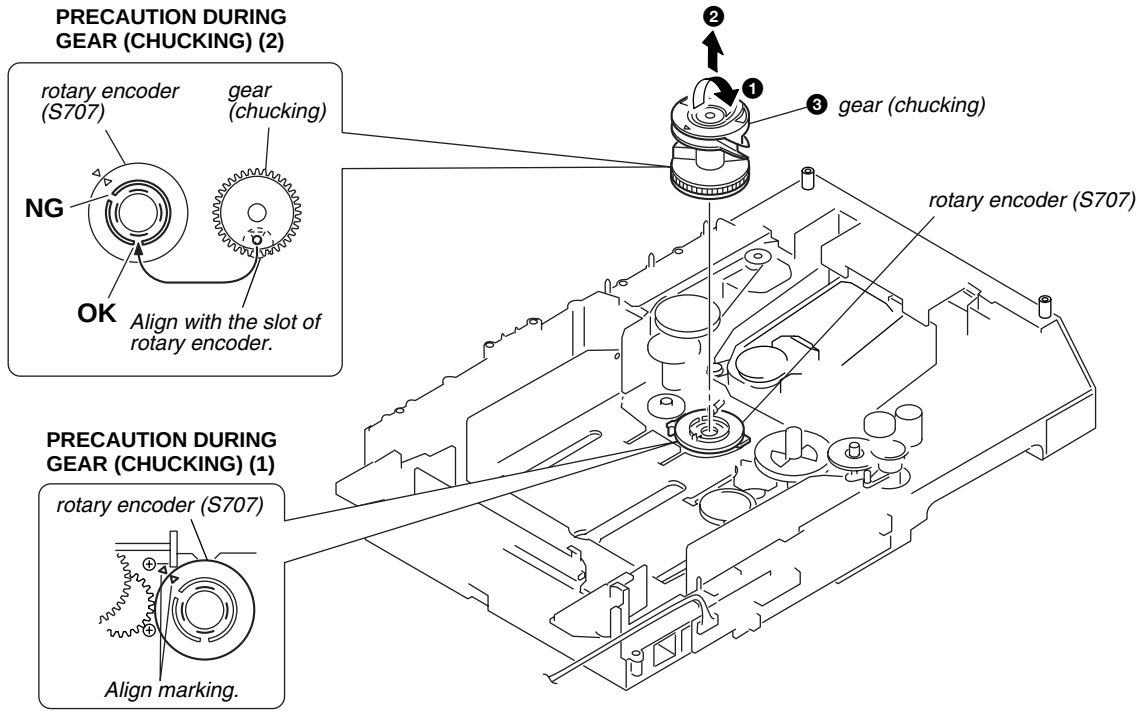
3-22. Gear (Gear A), Gear (Gear B), Gear (U/D Slider)



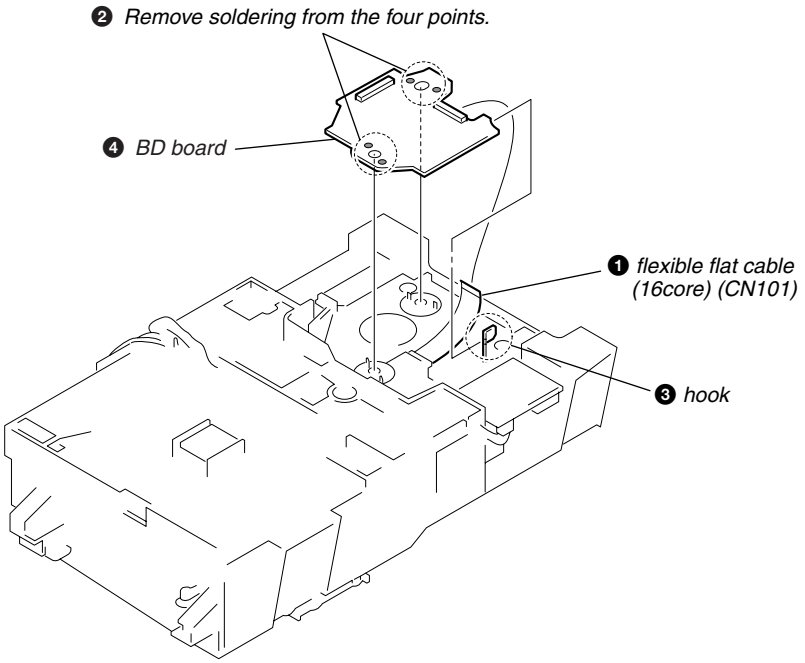
Precaution During Gear (Gear U/D Slider), Gear (Gear B), Gear (Gear A) Installation


❸ gear (gear B)
portion A
Adjust the gear (gear B) with the portion A as shown.
slider (U/D)
❶ Slide the slider (U/D) fully in the arrow direction.
❷ gear (U/D slider)
slider (U/D) gear
Adjust the gear so that it meshes with the bottom tooth of slider (U/D) gear, as shown.
❹ gear (gear A)
gear (gear B)
linearly
Adjust so as to be aligned with gear B linearly, as shown.

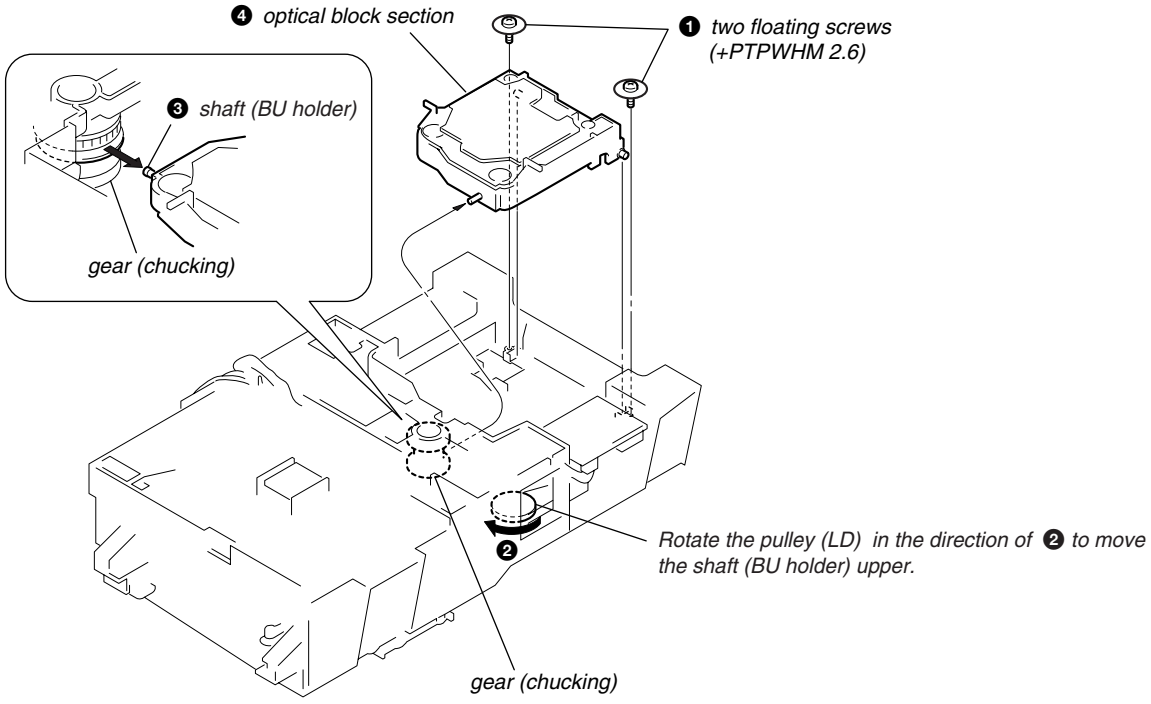
3-23. Gear (Chucking)



3-24. BD Board



3-25. Optical Block Section


❹ optical block section
❶ two floating screws (+PTPWHM 2.6)
❸ shaft (BU holder)
gear (chucking)
❷
Rotate the pulley (LD) in the direction of ❷ to move the shaft (BU holder) upper.
gear (chucking)

SECTION 4
TEST MODE

Setting the Test Mode

Procedure:

1. Press the [POWER] button to POWER on.
2. Press the [⏮ AMS ⏭] (DECK A), [SBM] and [⏮ AMS ⏭] (DECK B) buttons in order without releasing the button.
3. Turn the [⏮ AMS ⏭] (DECK B) knob to select the menu.
4. Press the [⏮ AMS ⏭] (DECK B) knob to execute the test mode.

Releasing the Test Mode

Procedure 1:

1. Turn the [⏮ AMS ⏭] (DECK B) knob to select the Ship Mode.
2. Press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
3. Press the [POWER] button to POWER off.

Procedure 2:

1. Press the [⏮ AMS ⏭] (DECK A), [SBM] and [⏮ AMS ⏭] (DECK B) buttons in order without releasing the button.
2. Press the [POWER] button to POWER off.

Contents of test mode

No.	Display	Function
1	SYS Version	System version display
2	CDR Version	CDR version display
3	BU Test	Deck A BU test mode
4	SERVICE	Deck A Service mode
5	Ship Mode	CD Shipment mode
6	FL ALL ON	Fluorescent indicator tube test
7	FL ALL OFF	Fluorescent indicator tube test
8	FL ITIMATSU	Fluorescent indicator tube test
9	LED CHECK	LED check
10	KEY CHECK	Keyboard check
11	RM CHECK	Remote commander check
12	CDR History	CDR error history display
13	Play Speed	Deck A x4 speed

System Version Display

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "SYS Version", and press the [⏮ AMS ⏭] (DECK B) knob.
2. The system version is displayed.
3. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
4. Press the [POWER] button to POWER off.

CDR Version Display

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "CDR Version", and press the [⏮ AMS ⏭] (DECK B) knob.
2. The CDR version is displayed.
3. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
4. Press the [POWER] button to POWER off.

BU Test Mode (Deck A)

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "BU Test", and press the [⏮ AMS ⏭] (DECK B) knob.
2. "bdt S CURVE" is displayed. This test mode is used in the Electrical Adjustment section.
3. Turn the [⏮ AMS ⏭] (DECK B) knob. "bdt RAM READ", "bdt RAM WRITE", "bdt COMOUT", "bdt FB TUNE" and "bdt ERR RATE" are displayed.
4. To exit from this mode, press the [MENU/NO] button and turn the [⏮ AMS ⏭] (DECK B) knob to display "bdt ERR RATE".
5. Press the [⏮ AMS ⏭] (DECK A), [SBM] and [⏮ AMS ⏭] (DECK B) buttons in order without releasing the button.
6. Press the [POWER] button to POWER off.

Service Mode (Deck A)

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "SERVICE", and press the [⏮ AMS ⏭] (DECK B) knob.
2. "SERVICE MODE" is displayed.
3. Press the [ERASE] button, "SLED OUT" is displayed and the sled moves to the outermost direction.
   When the [ERASE] button is released, "SLED STOP" is displayed and the sled stops.
4. Press the [FINALIZE] button, "SLED IN" is displayed and the sled moves to the innermost direction.
   When the [FINALIZE] button is released, "SLED STOP" is displayed and the sled stops.
5. To exit from this mode, press the [⏮ AMS ⏭] (DECK A), [SBM] and [⏮ AMS ⏭] (DECK B) buttons in order without releasing the button.
6. Press the [POWER] button to POWER off.

Note: Always move the pick-up to the most inside position when exiting from this mode.

Ship Mode

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob.
2. "Push POWER!" is displayed.
3. Press the [POWER] button to POWER off.

FL ALL ON Mode

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "FL ALL ON", and press the [⏮ AMS ⏭] (DECK B) knob.
2. All segments of fluorescent indicator tube and LED turn on.
3. Press the [MENU/NO] button, then "FL ALL ON" is displayed again.
4. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
5. Press the [POWER] button to POWER off.

FL ALL OFF Mode

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "FL ALL OFF", and press the [⏮ AMS ⏭] (DECK B) knob.
2. All segments of fluorescent indicator tube and LED turn off.
3. Press the [MENU/NO] button, then "FL ALL OFF" is displayed again.
4. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
5. Press the [POWER] button to POWER off.

FL ITIMATSU Mode

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "FL ITIMATSU", and press the [⏮ AMS ⏭] (DECK B) knob.
2. Checkered patterns of segments are displayed.
3. Press the [MENU/NO] button, then "FL ITIMATSU" is displayed again.
4. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
5. Press the [POWER] button to POWER off.

LED Check Mode

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "LED CHECK", and press the [⏮ AMS ⏭] (DECK B) knob.
2. Turn the [⏮ AMS ⏭] (DECK A) or (DECK B) knob clockwise. The green LED (DISC 1) turns on, then the orange LED (DISC 1) turns on. The each orange LED turns on after the green LED from DISC 1 to DISC 5. The LED (SBM) turns on at last. Counterclockwise rotation gives a performance in reverse order.
3. Press the [MENU/NO] button, then "LED CHECK" is displayed again.
4. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
5. Press the [POWER] button to POWER off.

KEY Check Mode

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "KEY CHECK", and press the [⏮ AMS ⏭] (DECK B) knob.
2. "Got 0 keys" is displayed.
3. Press the buttons, and when all the buttons are pressed (without the [POWER] button), "Got 35 keys" will be displayed.
4. To exit from this mode, press the [⏮ AMS ⏭] (DECK A), [SBM] and [⏮ AMS ⏭] (DECK B) buttons in order without releasing the button.
5. Press the [POWER] button to POWER off.

Remote Commander Check

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "RM CHECK", and press the [⏮ AMS ⏭] (DECK B) knob.
2. Press the [▷] key on the remote commander, then "Got PlayCom" is displayed.
3. Press the [MENU/NO] button, then "RM CHECK" is displayed again.
4. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
5. Press the [POWER] button to POWER off.

CDR History Display

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "CDR History", and press the [⏮ AMS ⏭] (DECK B) knob.
2. "00 ######## ########" is displayed as the first error hitory.
3. Turn the [⏮ AMS ⏭] (DECK B) knob to select the error history. The number of error histories is ten in all. (Refer to "Contents of CDR error history".)
4. Press the [MENU/NO] button, then "CDR History" is displayed again.
5. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
6. Press the [POWER] button to POWER off.

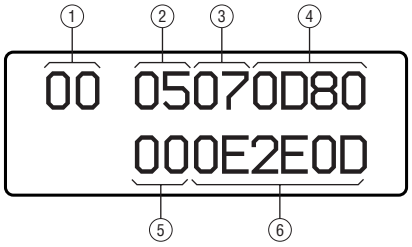
Play Speed Selection Mode (Deck A)

Procedure:

1. Enter the test mode, then turn the [⏮ AMS ⏭] (DECK B) knob to display "Play Speed", and press the [⏮ AMS ⏭] (DECK B) knob.
2. "x4 Play" is displayed. If a CD is in the deck A, pressing the [▷] button executes the 4 times speed playback.
3. Press the [■] button to stop the playback.
4. Press the [MENU/NO] button, then "Play Speed" is displayed again.
5. To exit from this mode, turn the [⏮ AMS ⏭] (DECK B) knob to display "Ship Mode", and press the [⏮ AMS ⏭] (DECK B) knob to execute the Ship Mode.
6. Press the [POWER] button to POWER off.

Contents of CDR error history

display(example)



(hexadecimal)

① Order of the error history
00 to 09: ten error histories in all

② Error contents
01: unable to focus on
02: Q code/ATIP discontinuous (several frames preceding)
03: Q code/ATIP unreadable
04: search taking more than sixteen seconds
05: focus failure
06: sled over run
07: not passing by start time to write
08: audio buffer over
09: sync failure
OA: Spindle lock taking more than 8 secouds

example : 05 is focus failure

③ Operation mode
bit 7: Speed
0: normal speed
1: x4 speed
bit 6 to bit 0: Number of inner condition
01: POWER off condition/during shift to POWER on
02: POWER off and shipment setting/during shift to POWER off and shipment setting
03: stop condition/during stop
04: during start up of servo
05: during TOC reading and others
06: during CD TEXT reading
07: during standby(waiting for command from the CD system)/during search
08: during playback
09: during manual search(playback)

0A: during pause
0B: during manual search(pause)
0C: during OPC
0D: recording standby/during recording pause (enable to shift to recording)
0E: during recording
0F: unable to record (waiting for shift to being recordable)
10: PMA updating
11: during operation of unfinalize
12: during operation of finalize
13: PMA erasing
14: emergency
15: recording preparation
16: recording end

examples :

HEX \ bit	7	6 5 4	3 2 1 0	Operation mode
07	0	000	0111	normal speed, during standby(waiting for command from the CD system)/during search
	0	0	7	
91	1	001	0001	x4 speed, during operation of unfinalize
	1	1	1	

④ Start time of read in(compression method)
bit 15 to bit 13 : (min)
0: 97 min
1: 96 min
2: 95 min
7: others
bit 12 to bit 7: (sec)
bit 6 to bit 0: (frame)

examples :

HEX \ bit	15 14 13	12 11 10 9 8 7	6 5 4 3 2 1 0	Start time of read in
0D,80	000	0 1101 1	000 0000	97 : 27 : 00
	97(min)	27(sec)	0(frame)	
11,16	000	1 0001 0	001 0110	97 : 34 : 22
	97(min)	34(sec)	22(frame)	

⑤ Write POWER (integer of mW x 10, available during write processing)
examples: 00 means unavailable
(when ③ operation mode is not recording)
: A3 means 163(decimal), i.e. 16.3 mW

⑥ ATIME (min)/(sec)/(frame)
example: 0E, 2E, 0D means 14 : 46 : 13

Abbreviations:
ATIP : Absolute Time In Pre-groove
OPC : Optimum Power Control
PMA : Program Memory Area

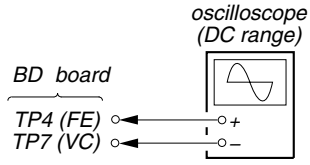
SECTION 5
ELECTRICAL ADJUSTMENTS

CD SECTION (DECK A)

Note :
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

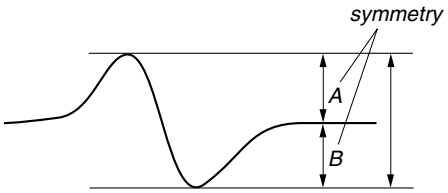
S Curve Check

Connection :



Procedure :

1. Connect an oscilloscope to test point TP4 (FE) and TP7 (VC) on the BD board.
2. Turn the power on.
3. Load the disc (YEDS-18).
4. Enter the test mode, select the BU Test and press the ⏮ AMS ⏭ (DECK B) knob to display "bdt S CURVE".
5. Press the ⏮ AMS ⏭ (DECK B) knob. "LD AL" is displayed and playback starts automatically.
6. Check the oscilloscope waveform (S-curve) is symmetrical between A and B.
7. Press the MENU/NO button to stop playback.
8. Exit from the test mode.
   (Refer to the TEST MODE Section)

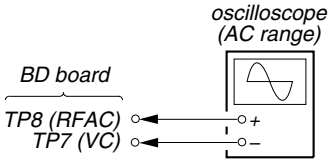


Note: Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.

Checking Location : BD board (Side B)(See page 24)

RF Level Check

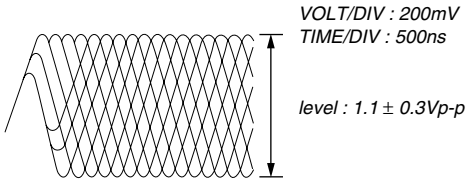
Connection :



Procedure :

1. Connect an oscilloscope to TP8 (RFAC) and TP7 (VC).
2. Turn the power on.
3. Load the disc (YEDS-18) and playback the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

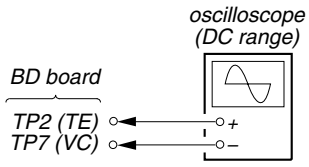
Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.



Checking Location : BD board (Side B)(See page 24)

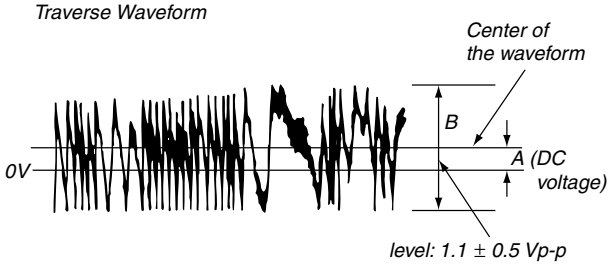
E-F Balance Adjustment

Connection :

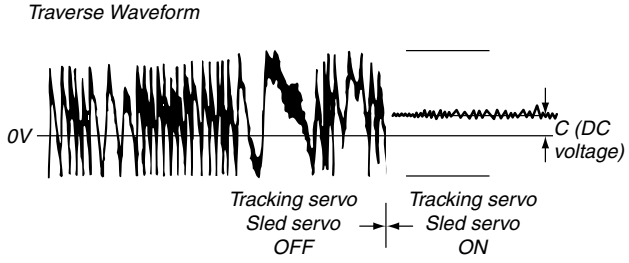


Procedure:

1. Connect an oscilloscope to TP2 (TE) and TP7 (VC) on the BD board.
2. Turn the power on.
3. Load the disc (YEDS-18) and playback the number five track.
4. Enter the Service Mode. (see page 20) Press the INPUT button until "TRV ON" is displayed. (The tracking servo and the sledding servo are turned off.)
5. Check the level B of the oscilloscope waveform. Rotate the RV101 on the BD board and adjust so that the A (DC voltage) of the center of the traverse waveform becomes 0 volt.



6. Press the INPUT button until "TRV OFF" is displayed and the tracking servo and the sledding servo are turned on. Confirm that the C (DC voltage) is almost equal to the A (DC voltage).



7. Exit from the test mode. (see page 20)

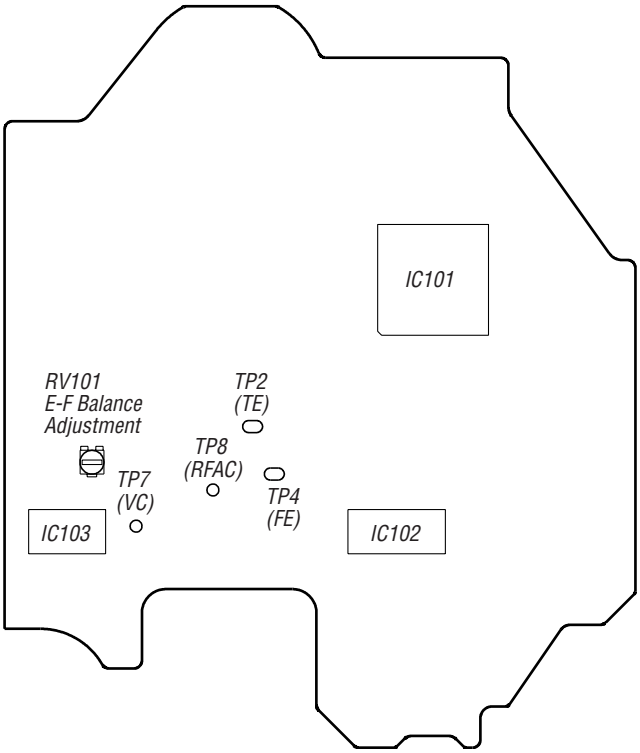
Checking Location : BD board (Side B)(See page 24)

Adjustment at Replacement of CD Base Unit (BU-30BBD61M)

Perform the E-F Balance Adjustment at replacement of CD base unit (BU-30BBD61M).

Adjustment and Checking Location:

[BD BOARD] — SIDE B —

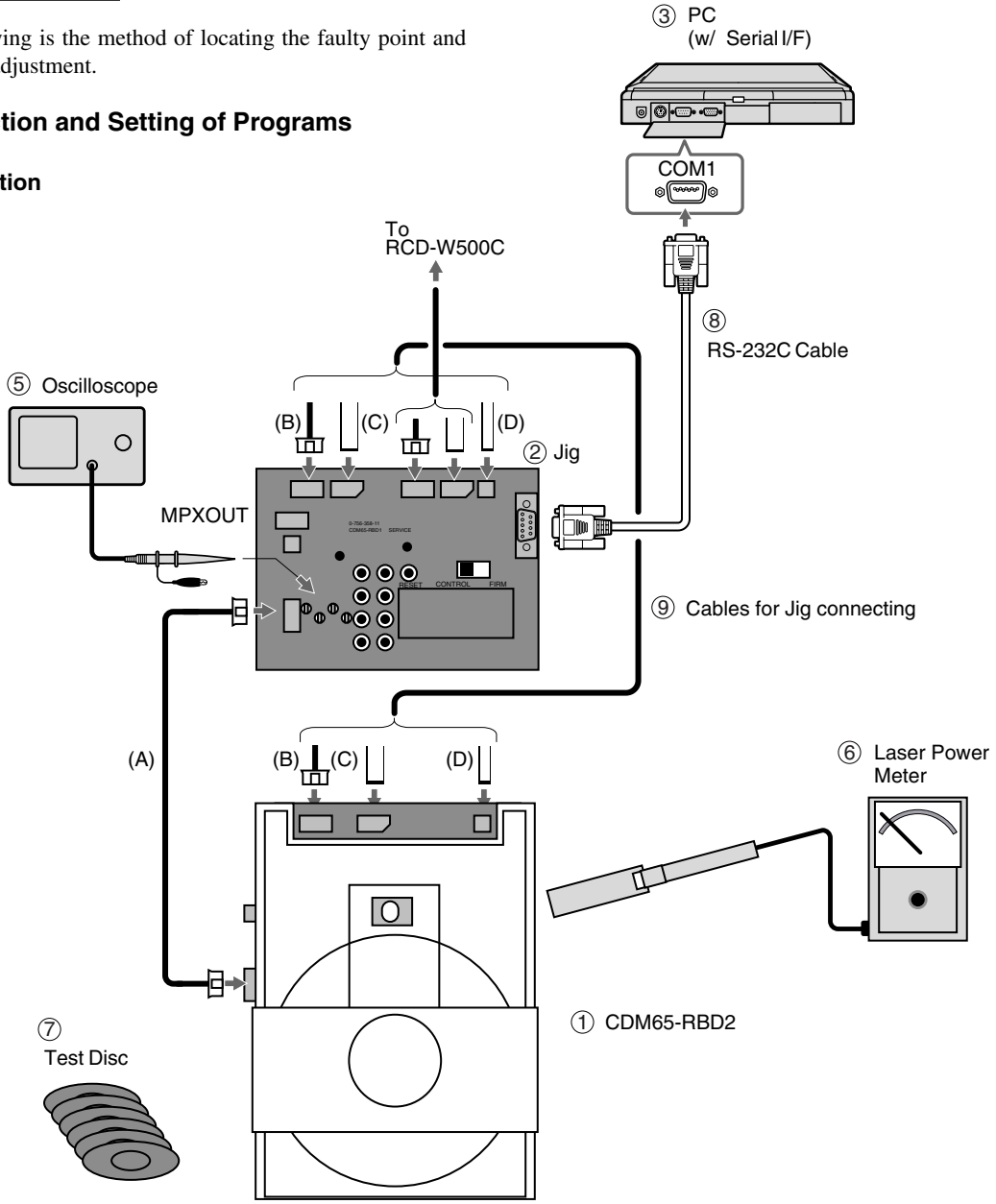


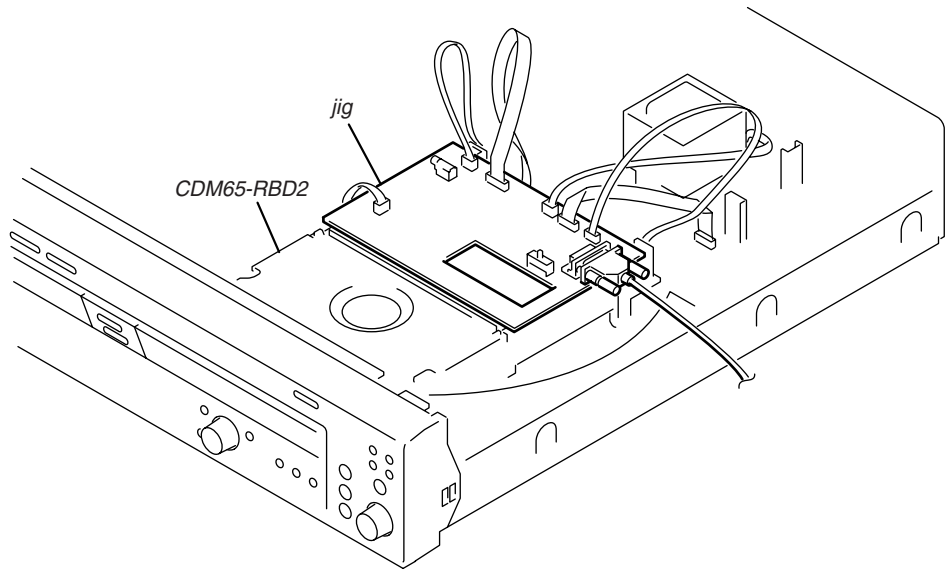
CD-R/RW SECTION

* The following is the method of locating the faulty point and electrical adjustment.

1. Connection and Setting of Programs

1-1. Connection





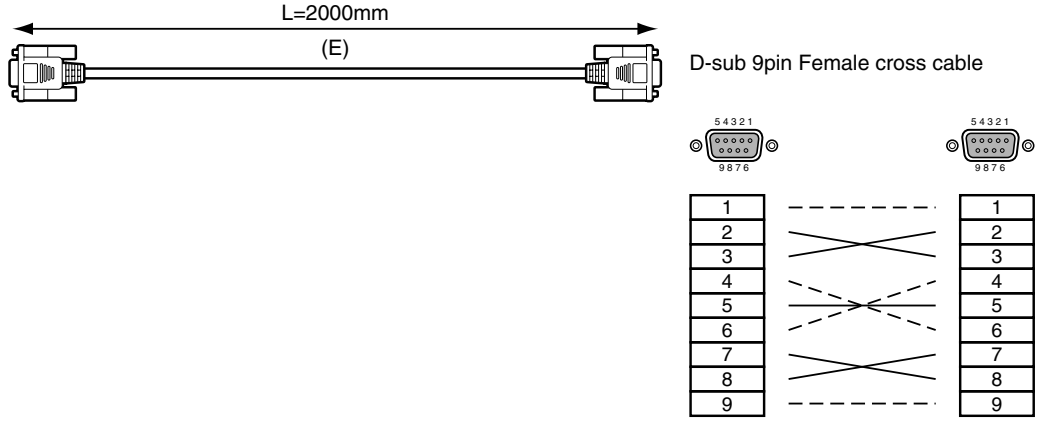
▲ Fig. Position of Jig (Set the jig after removing the cover of CDM65-RBD2)

1-2. Equipments to prepare

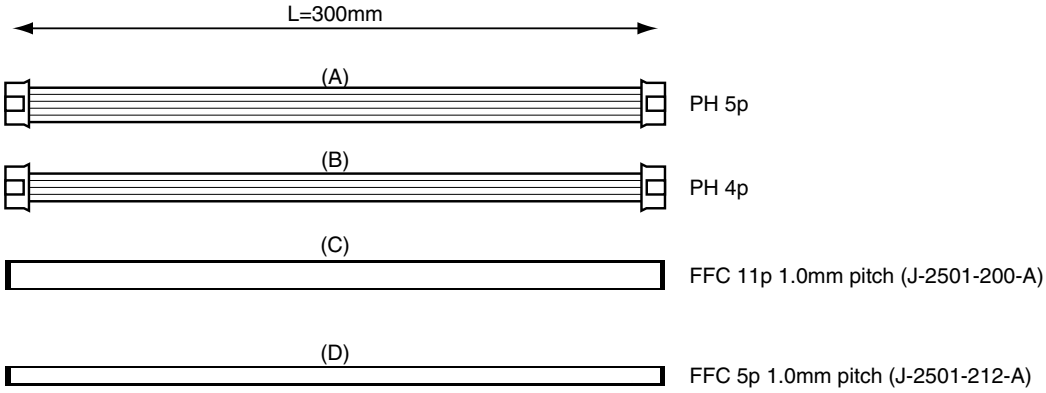
①	Test Object	Both RBD2 and CDM65-RBD2 shall be tested. RBD2 : Flash Memory Writing of of Circuit Test by Self-diagnostics CDM65-RBD2 : Electrical Adjustment Performance Test
②	Jig	(With ⑨ Cables, Parts No.J-2501-223-A)
③	PC	Windows95/98/2000/Me with COMport (RS-232C)
④	Programs	TeraTerm Pro + Service macro
⑤	Oscilloscope	More than 150MHz
⑥	Laser Power Meter	LEADER LPM-8001 (Parts No.J-2501-046-A)
⑦	Test Disc	

PATD-012 : (Parts No.4-225-203-1)	Adjustment for Playback	(CD,CD-R)
TCD-W091W : (Parts No.J-2501-226-A)	Adjustment for Playback	(CD-RW)
CRM74 (Blank CD-R) :	Adjustment and Check for Recording	(CD-R)
CWM74 (Blank CD-RW) :	Check for Recording	(CD-RW)
TCD-W032W : (Parts No.J-2501-227-A)	Defocus tolerance	(CD-RW)

⑧ RS-232C Cable



⑨ Cables for Jig connecting



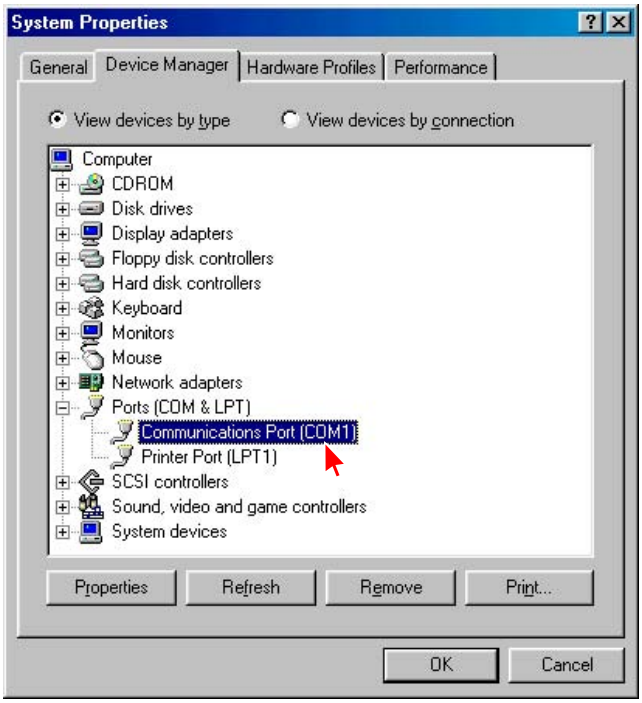
1-3. Setting of Programs (Tera Term Pro and Service macro)

* Confirmation of System (Windows 98 is used in this explanation) Preparation for Terminal software

1) Set up the serial port from OS.

a) Select Start → Settings → Control Panel and select System → Device manager → Communication Port (COMn) (see Fig. 1-1)

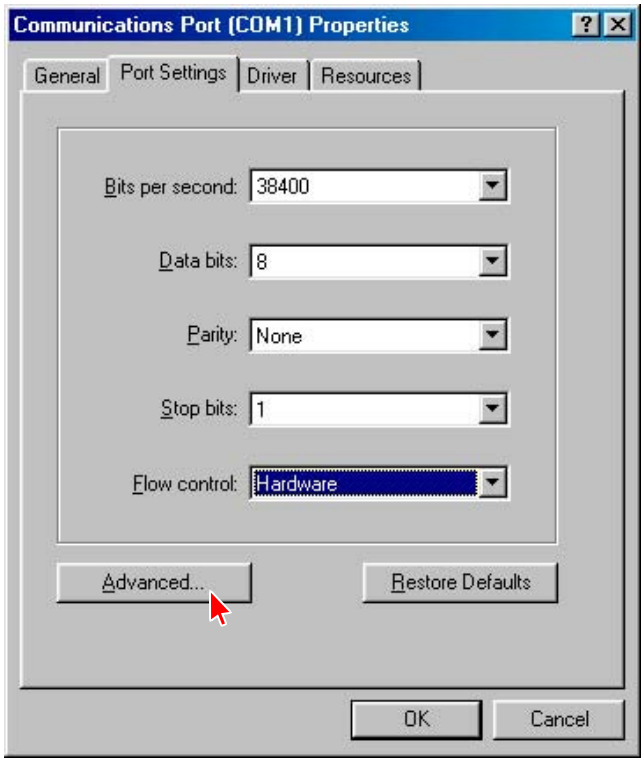
* Specify the COM port that connected with JIG of CDM65.



▲ Fig. 1-1

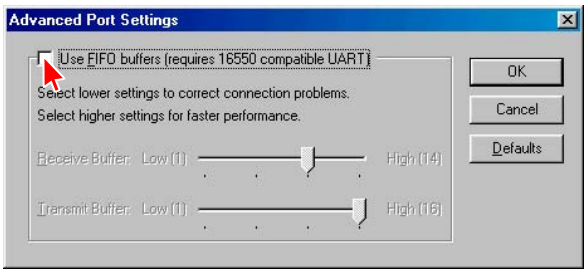
b) Double click COMn (as you connect to the Jig-CDM65) Set the parameters as below.

Bits per second : 38400
Data bits : 8
Parity : non
Stop bits : 1
Flow control : hardware
(see Fig.1-2)



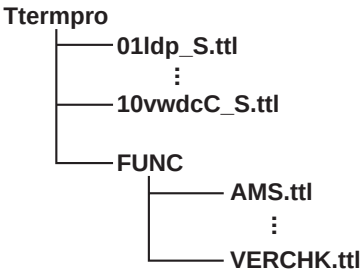
▲ Fig. 1-2

c) Press “Advanced...” button (see Fig.1-2)
Remove the check “Use FIFO buffers ...”
(see Fig.1-3)


Advanced Port Settings
Use FIFO buffers (requires 16550 compatible UART)
Select lower settings to correct connection problems.
Select higher settings for faster performance.
Receive Buffer: Low (1) High (14)
Transmit Buffer: Low (1) High (16)
OK
Cancel
Defaults

▲ Fig. 1-3

2) Unzip the file “ttermp23.zip” by PC.
(The file “ttermp23.zip” is distributed together with the service manual.)
3) After unzip the files, you can find setup.exe.
Double click the setup.exe.
Please install as the installer is.
Do not change the directory that files are installed. (use default)
4) Unzip the file “030416_Service.zip” by PC.
Copy all “ttl” file and “FUNC” folder which are contained in “030416_Service” and paste them in the “Ttermpro” file as below.
(The file “030416_Service.zip” is distributed together with the service manual.)



▲ Fig. 1-4

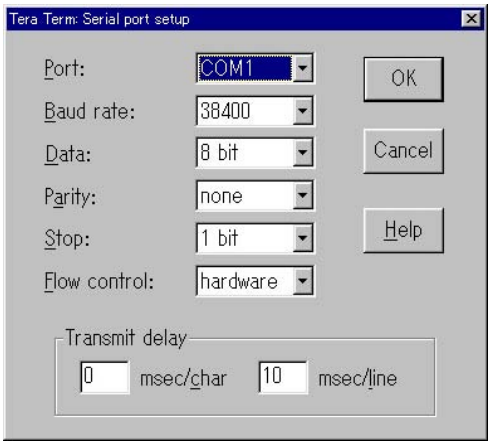
Note : Do not change the directory path.

5) Start-up the TeraTermPro
Double click the ttermpro.exe.

6) Set up the TeraTermPro (IMPORTANT!!)
a) Select Setup → Serial Port... and set the parameters as below.

Port : (As you connect to the Jig-CDM65)
Baud rate : 38400
Data : 8 bit
Parity : none
Stop : 1 bit
Flow control : hardware
Transmit delay : 0 msec/char 10 msec/line

After settings, press “OK” button. (see Fig.1-5)

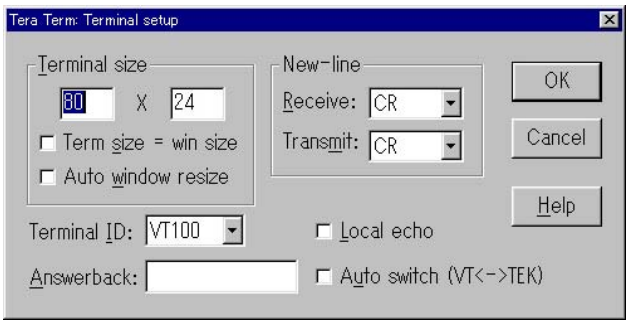


▲ Fig. 1-5

b) Terminal setup
Set the parameters as below.

New-line receive : CR
transmit : CR

After settings, press “OK” button. (see Fig.1-6)

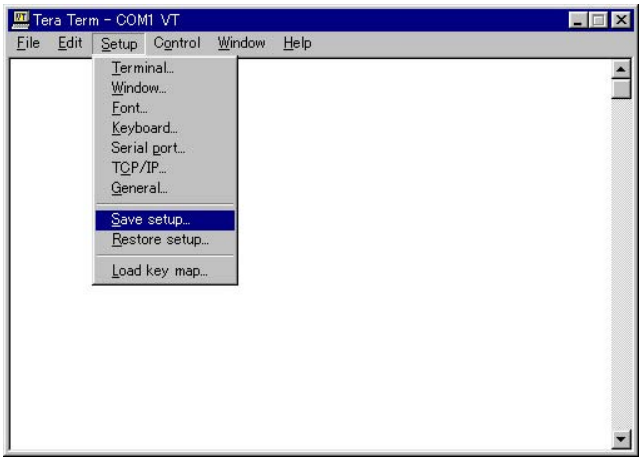


▲ Fig. 1-6

c) General setup
Select the language and press “OK” button. (see Fig.1-7)

▲ Fig. 1-7

d) Saving the setup
Select Setup → Save setup... and save as teraterm.ini in the Ttermpro directory. (see Fig.1-8)



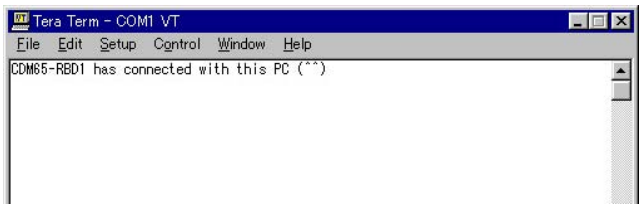
▲ Fig. 1-8

7) Connect the JIG and CDM65.
8) Confirm the S510 on JIG is ‘CONTROL’.

9) Power on the CDM65 and press SW101(RESET) on JIG.

“CDM65-RBD1 has connected with this PC (^^)” is displayed. (see Fig.1-9)

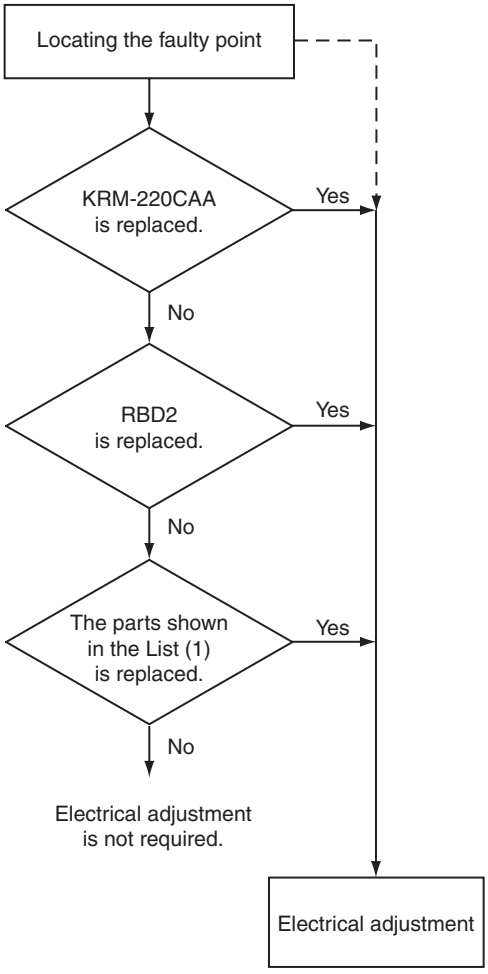
If above message is not displayed, you may have some mistakes. Please confirm previous setting procedures again.



▲ Fig. 1-9

2. Repair Works That Require Electrical Adjustment

In the case of repair works as shown below, electrical adjustment is required.

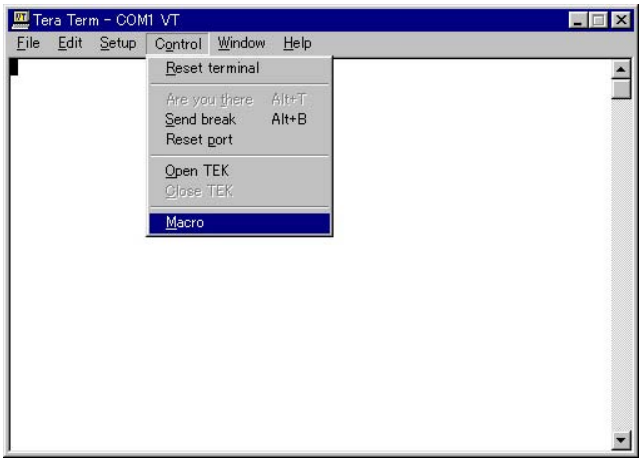


List (1) : IC101, IC103, IC171, IC201, IC502

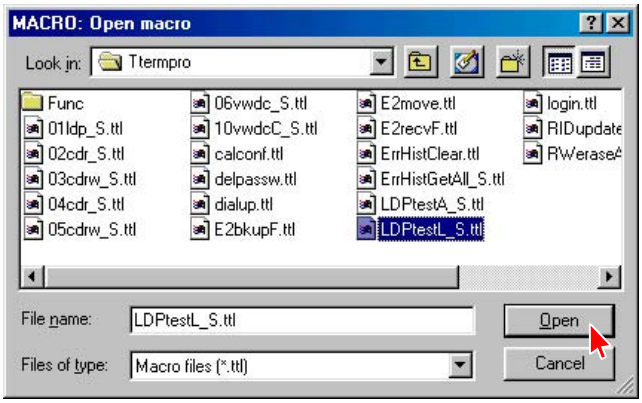
3. Locating the Faulty Point

3-1. Laser Power Check

1) Select the menu as follows. Control → Macro, and select LDPtestL_S.ttl.
Press “Open”. (Fig. 3-1, 3-2)



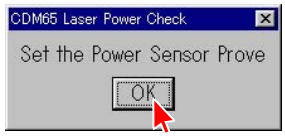
▲ Fig. 3-1



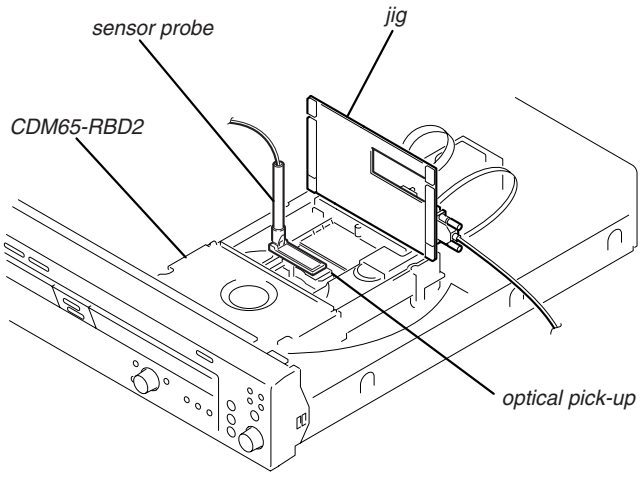
▲ Fig. 3-2

2) Press the “RESET” button (SW101) of the jig as prompted by the display.

3) Place probe of a laser power meter in the specified position following the display as shown in Fig. 3-3. (See Fig. 3-3-a)



▲ Fig. 3-3



▲ Fig. 3-3-a

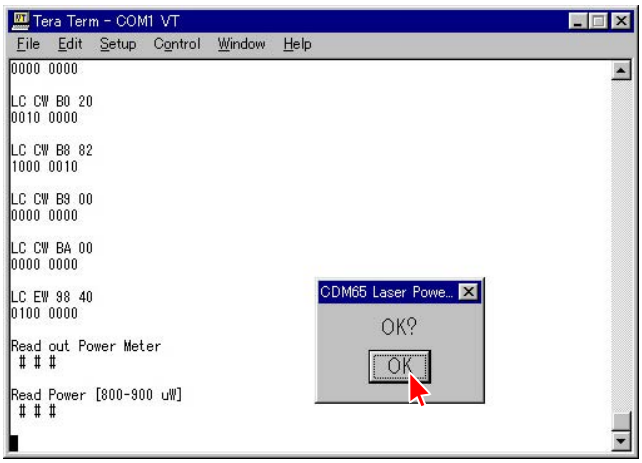
Note : Do not add stress to an optical pick-up.

4) When the display shown in Fig. 3-4 appears, set the Range of a laser power meter to “1 mW” and press “OK”.

▲ Fig. 3-4

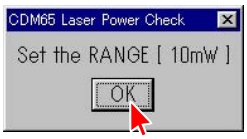
5) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press “OK”. (Fig. 3-5)

LEADER LPM-8001 : 0.76 to 0.86 mW



▲ Fig. 3-5

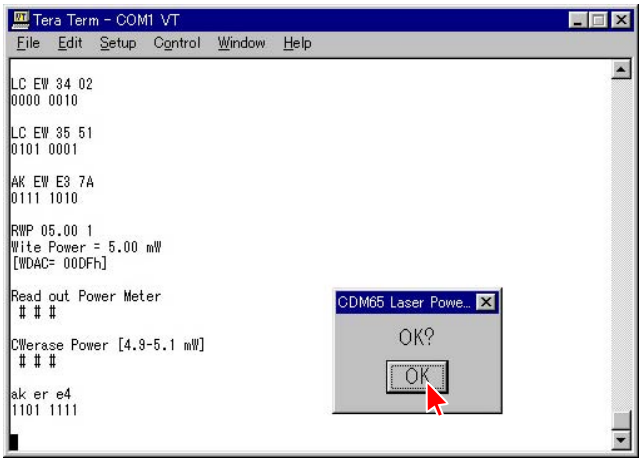
6) When the display shown in Fig. 3-6 appears, set the Range of a laser power meter to “10 mW” and press “OK”.



▲ Fig. 3-6

7) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press “OK”. (Fig. 3-7)

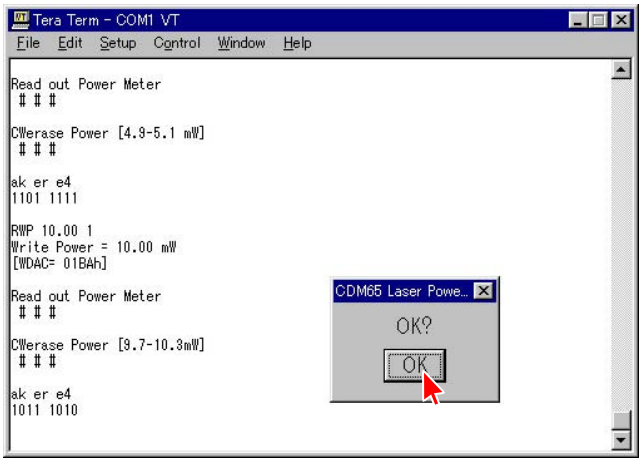
LEADER LPM-8001 : 4.5 to 4.7 mW



▲ Fig. 3-7

8) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press “OK”. (Fig. 3-8)

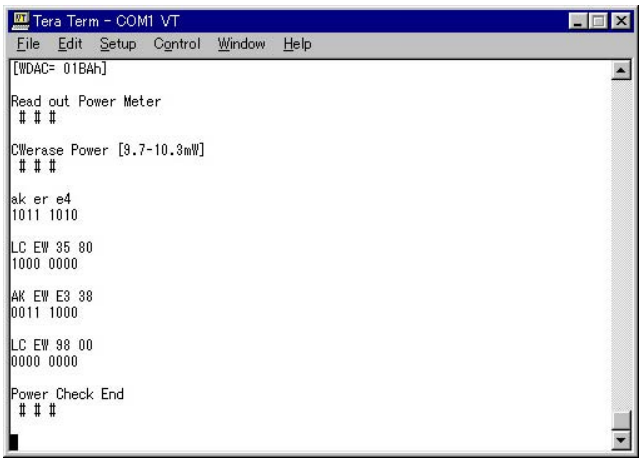
LEADER LPM-8001 : 9.2 to 9.6 mW



▲ Fig. 3-8

9) Check that the message “Power Check End” appears on display. (Fig. 3-9)

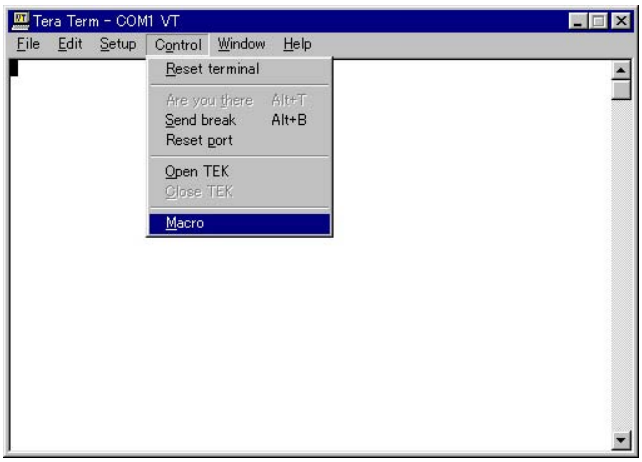
If the measurement result is outside the specification value, either perform Section 4. CDM65-RBD2 Electrical Adjustment, or locate the cause of the error by performing the Laser Deterioration Judgment.



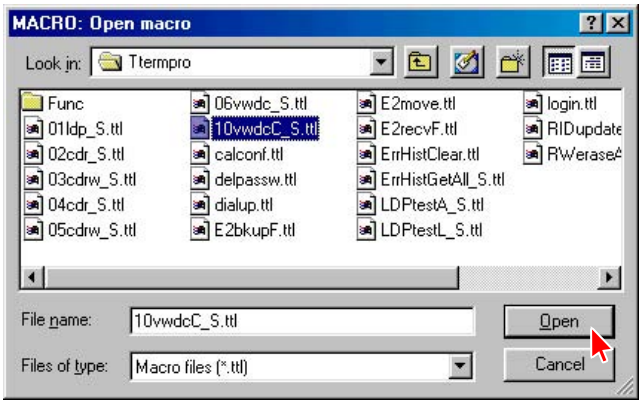
▲ Fig. 3-9

3-2. Laser Deterioration Judgment

1) Select the menu as follows. Control → Macro, and select 10vwdcC_S.ttl.
Press “Open”. (Fig. 3-10, 3-11)



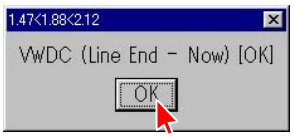
▲ Fig. 3-10



▲ Fig. 3-11

2) Press the “RESET” button (SW101) of the jig as prompted by the display.

3) When the message [OK] appears as shown in Fig. 3-12, press the “OK” button.
When the laser unit KRM-220CAA (Op) is normal without deterioration of laser, the message [OK] appears. If the laser unit is deteriorated, the message [NG] appears. Then, replace the laser unit KRM-220CAA (Op).



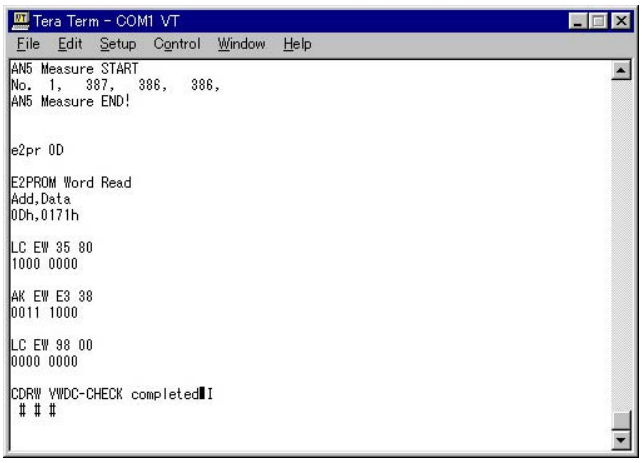
▲ Fig. 3-12

4) Check that the message “CDRW VWDC-CHECK completed!” appears. (Fig. 3-13)

NG Judgment Result Indication

When the present VWDC value of the laser unit KRM-220CAA (Op) does not satisfy the required specification, the message “VWDC (Line End - Now) [NG]” appears.

Measure: Check the peripheral of CN101.
Replace KRM-220CAA.



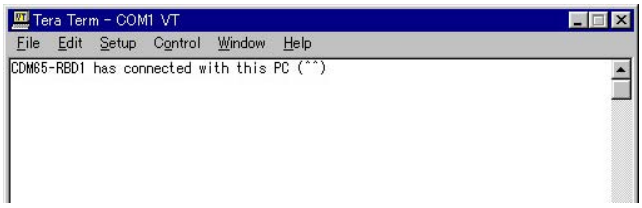
▲ Fig. 3-13

3-3. Use of Self Diagnosis Function-1 (In the case when result data of the past electrical adjustment, is not needed.)

Perform the self diagnosis as described below in the case when electrical adjustment is not performed yet, or when result data of the electrical adjustment in the past, is not needed and ready to be erased.)

1) Connect the CDM65-RBD2 (abbreviated as CDM65 hereafter) that is going to be repaired, the jig and a PC following the Connection Diagram as shown in section 1-1.
2) Turn on the power of the RCD-W500C in which the CDM65 is installed.
3) Start up the TeraTermPro that is installed in PC. Set the switch S510 on the jig to “CONTROL”.

4) Press the “RESET” button (SW101) of the jig. (Fig. 3-14)



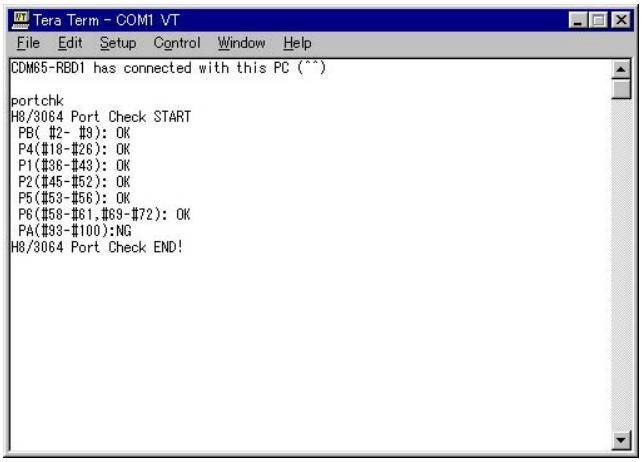
▲ Fig. 3-14

5) Type portchk [Enter] from keyboard of PC. (Fig. 3-15)

Note 5-1 : When the KRM-220CAA is connected, the spindle motor rotates at a high speed. If the message “H8/3064 Port Check END!” appears, press the “RESET” button and stop the spindle.
Note 5-2 : When the CDM65 (loading mechanism) is installed, ignore the message “PA (#93-100): NG”.

Confirm that “OK” is displayed in all items except for the cases as described above.

If “NG” is displayed in any item, it is assumed that the pin number of IC501 as shown in Fig. 3-15 is defective or its peripheral has abnormality. Perform the repair work again and repeat the self diagnosis. Repeat the repair work and self diagnosis until OK is displayed.



▲ Fig. 3-15

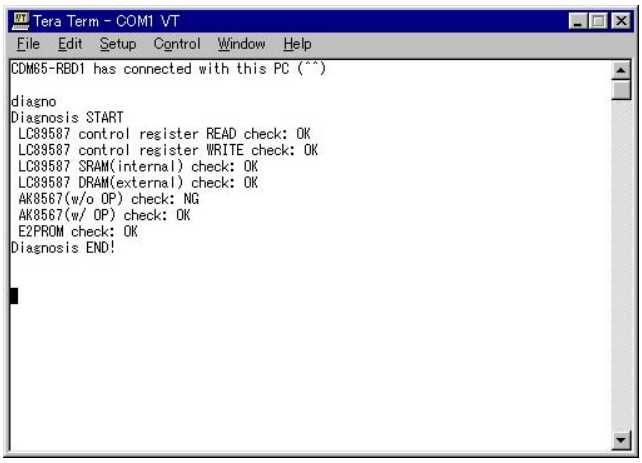
6) Type diagno [Enter] from keyboard of PC.

Note 6-1 : When the KRM-220CAA is connected, the spindle motor rotates at a high speed. If the message "Diagnosis END!" appears, press the "RESET" button and stop the spindle.

Note 6-2 : When the KRM-220CAA is connected (i.e. when the FFC for optical laser unit is connected to CN101 is connected), ignore the message "AK8567 (w/o OP) check: NG".

Confirm that "OK" is displayed in all items except for the cases as described above.

If "NG" is displayed in any item, it is assumed that the point indicated by the item in Fig. 3-16 is defective or its peripheral has abnormality. Perform the repair work again and repeat the self diagnosis. Repeat the repair work and self diagnosis until "OK" is displayed.


Tera Term - COM1 VT
File Edit Setup Control Window Help
CDM65-RBD1 has connected with this PC (^^)
diagno
Diagnosis START
LC89587 control register READ check: OK
LC89587 control register WRITE check: OK
LC89587 SRAM(internal) check: OK
LC89587 DRAM(external) check: OK
AK8567(w/o OP) check: NG
AK8567(w/ OP) check: OK
E2PROM check: OK
Diagnosis END!

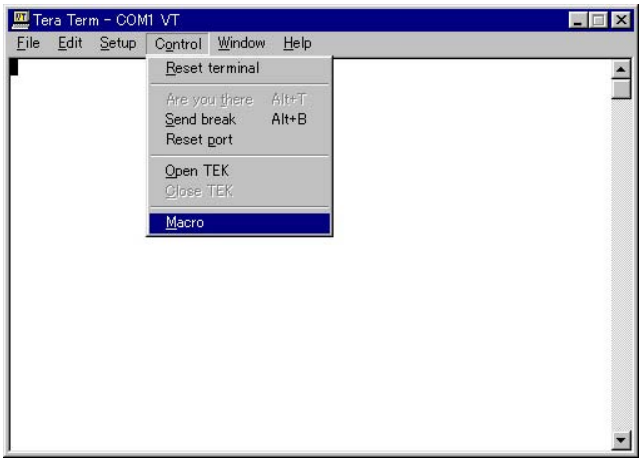
▲ Fig. 3-16

7) Perform the operation check.

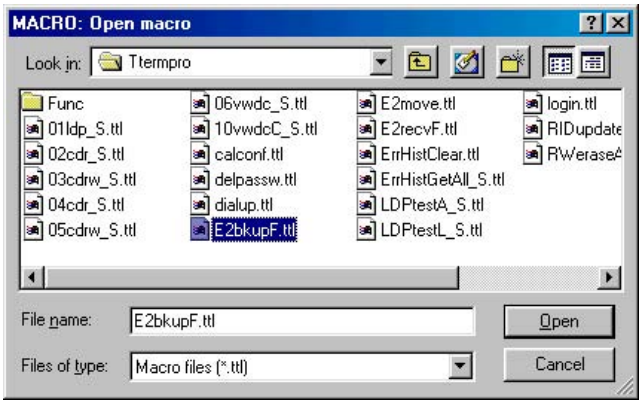
3-4. Use of Self Diagnosis Function-2 (In the case when result data of the past electrical adjustment, should be left saved.)

Perform the self diagnosis as described below in the case when the faulty point could not be identified even after completion of the repair work that is defined as "The repair work in which electrical adjustment is not required" in section "2. Repair Works That Require Electrical Adjustment".

1) Select the menu as follows. Control → Macro, and select E2bkupF.ttl.
Press "Open". (Fig. 3-17, 3-18)

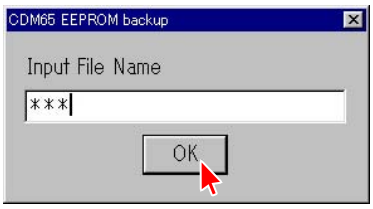


▲ Fig. 3-17



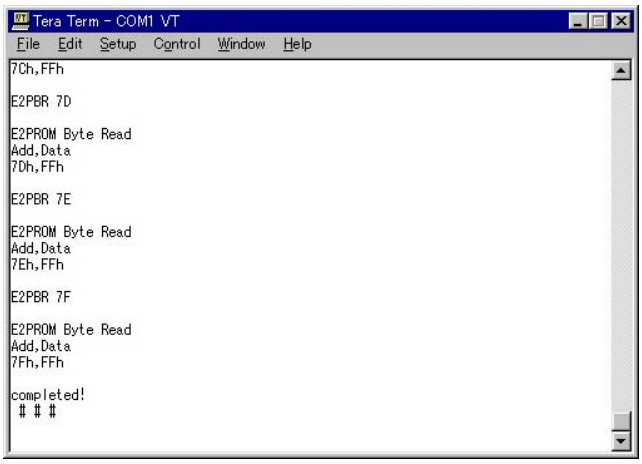
▲ Fig. 3-18

2) Type the filename in which result of electrical adjustment is going to be saved. Press “OK”. (Fig. 3-19)



▲ Fig. 3-19

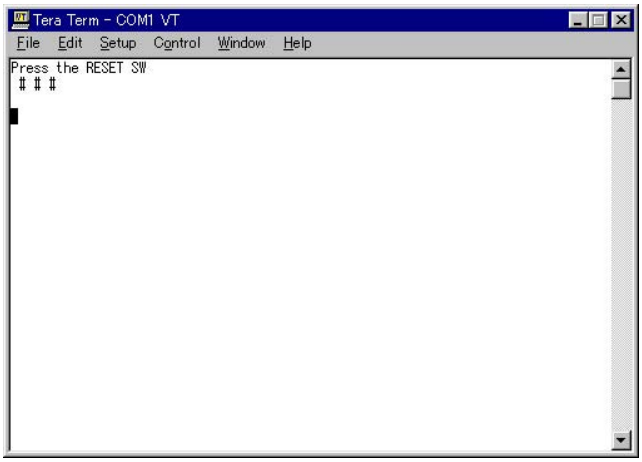
3) Confirm that the message “completed!” appears.
The EEPROM data is backed up. (Fig. 3-20)



▲ Fig. 3-20

4) Perform step 1) through step 6) of section “3-3. Use of Self Diagnosis Function-1”.
5) Select the menu as follows. Control → Macro, and select E2recvF.ttl.
Press “Open”.

6) Press the “RESET” button (SW101) of the jig as prompted by the display. (Fig. 3-21)

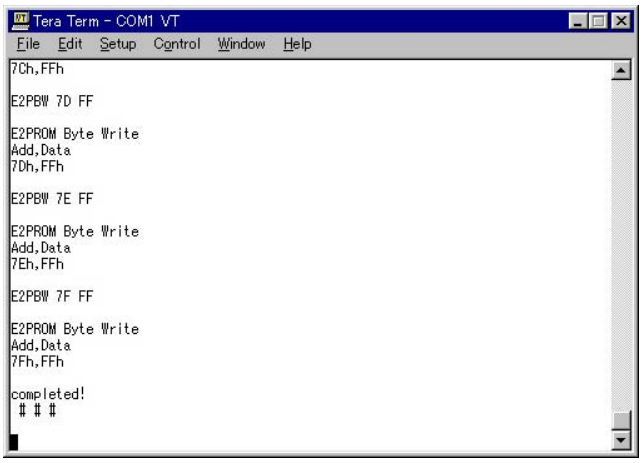


▲ Fig. 3-21

7) Type the filename in which result of electrical adjustment is saved. Press “OK”. (Fig. 3-22)

▲ Fig. 3-22

8) Confirm that the message “completed!” appears.
The EEPROM data is recovered. (Fig. 3-23)



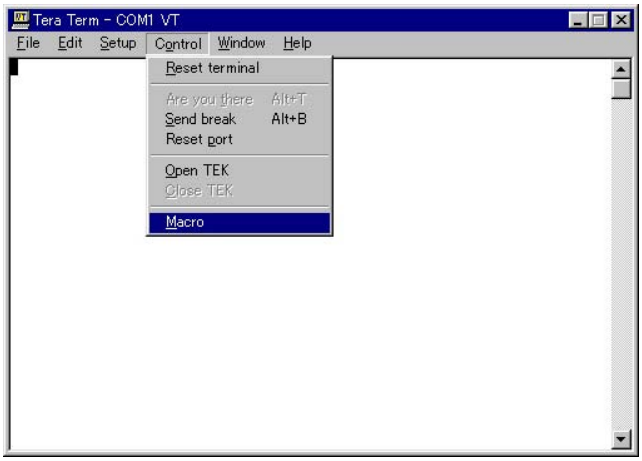
▲ Fig. 3-23

9) Perform the operation check.

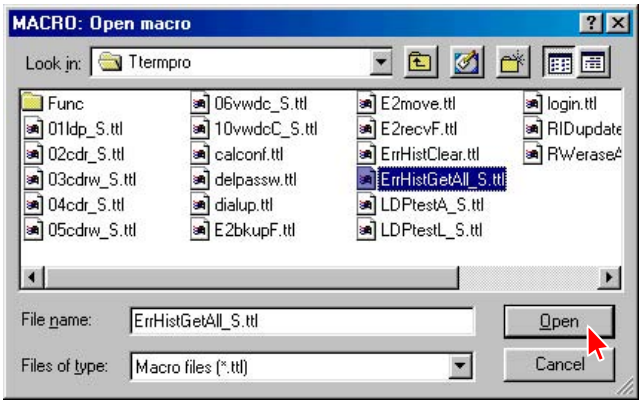
3-5. Acquisition of Error History and Acquisition of Elapsed Operating Hours

Check if error has occurred or not by performing the following steps. If error has occurred, it is interpreted and saved in the specific directory. Check contents of the error by viewing the specific directory as described below.

1) Select the menu as follows. Control → Macro, and select ErrHistGetAll_S.ttl.
Press “Open”. (Fig. 3-24, 3-25)



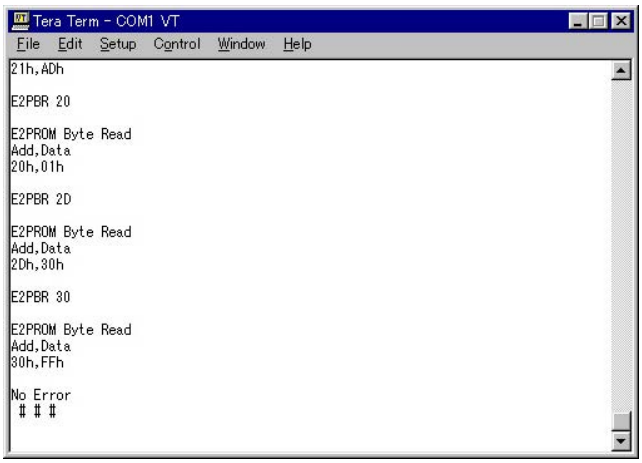
▲ Fig. 3-24



▲ Fig. 3-25

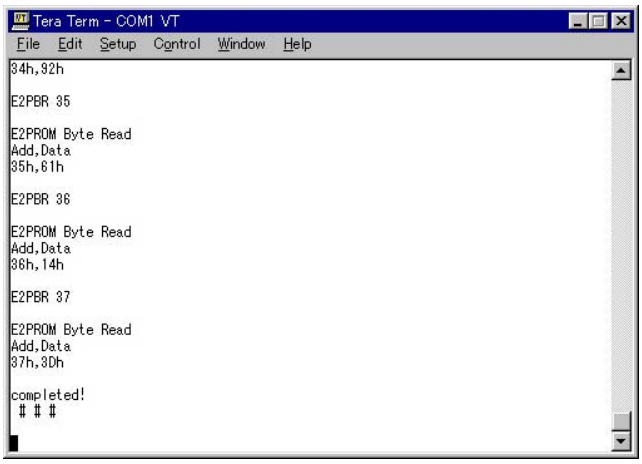
2) Press the “RESET” button (SW101) of the jig as prompted by the display.

3) When there is no error, the display as shown in Fig. 3-26 appears.



▲ Fig. 3-26

4) When error has occurred, the display as shown in Fig. 3-27 appears showing error history. Contents of the errors are displayed as shown in Fig. 3-28 after interpretation of the error log. Check the contents of the error by looking at the file “EEPROM_Errorlog.txt” in the TeraTermPro directory



▲ Fig. 3-27

5) The elapsed operating hours is shown at the top of “EEPROM_Errorlog.txt” regardless of presence/absence of the error history. Check the elapsed operating hours from the display as shown in Fig. 3-28.

```
SN = xxxx
 Op elapsed time:       12:0:56
 Spindle elapsed time: 17:9:44

**** Error Log data(0) ****
Error Pointer= 38
Error Code= 05,04,E0,00,00,01,0D,0D
Focus is dropped
1x speed
Servo wakeup
Lead In Start Time= 7:0:0
Laser Power= 0
ATIME= 1:13:13

**** Error Log data(-1) ****
Error Pointer= 30
Error Code= 05,04,E0,00,00,00,14,43
Focus is dropped
1x speed
Servo wakeup
Lead In Start Time= 7:0:0
Laser Power= 0
ATIME= 0:20:67
```

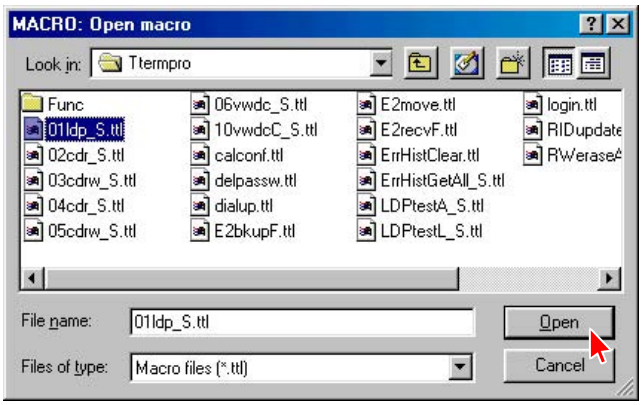
▲ Fig. 3-28 : Error log example

4. CDM65-RBD2 Electrical Adjustment

4-1. Laser Power Adjustment

1) Start up the TeraTermPro and set the switch S510 on the jig to “CONTROL”.

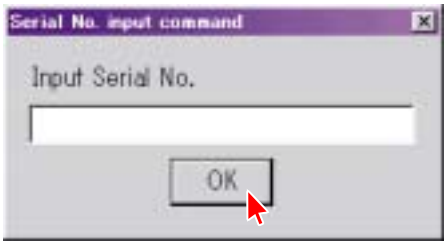
2) Select the menu as follows. Control → Macro, and select 01ldp_S.ttl.
Press “Open”. (Fig. 4-1)



▲ Fig. 4-1

3) Press the “RESET” button (SW101) of the jig as prompted by the display.
4) Press the “RESET” button (SW101) of the jig again as prompted by the display.

5) When the display as shown in Fig. 4-2 appears, type the serial number (see Fig. 4-3) that is printed on the label attached to the RBD2. (This dialog appears only when the EEPROM IC502 is replaced.)



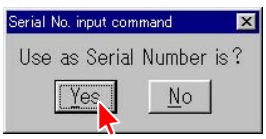
▲ Fig. 4-2

▲ Fig. 4-3

When the display as shown in Fig. 4-4 appears, press “No”.

▲ Fig. 4-4

When the display as shown in Fig. 4-5 appears after that, press “Yes”.



▲ Fig. 4-5

6) When the display as shown in Fig. 4-6 appears, place the probe of the laser power meter on top of the optical laser unit, and press “OK”. (See Fig. 3-3-a, page 31)

▲ Fig. 4-6

7) When the display as shown in Fig. 4-7 appears, set the Range of a laser power meter to “1 mW” and press “OK”.

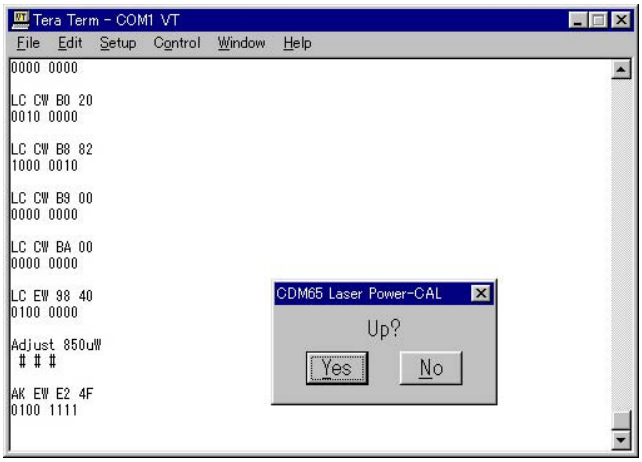
▲ Fig. 4-7

8) Adjust the laser output power as follows.
The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

LEADER LPM-8001 : 0.81 +/- 0.05 mW (0.76 to 0.86 mW)

* To increase the laser output power
Press [Yes] of the “Up?” dialog box.
* To decrease the laser output power
Press [No] of the “Up?” dialog box and then press [Yes] of the “Down?” dialog box.

Repeat until the laser output power satisfies the specification. (Fig. 4-8, 4-9)



▲ Fig. 4-8

▲ Fig. 4-9

* When the setting value is determined
Press [No] of the “Up?” dialog box
and then press [No] of the “Down?” dialog box
and press [Yes] of the “Save?” dialog box. (Fig. 4-10)

▲ Fig. 4-10

9) When the display shown in Fig. 4-11 appears, set the Range of a laser power meter to “10 mW” and press “OK”.

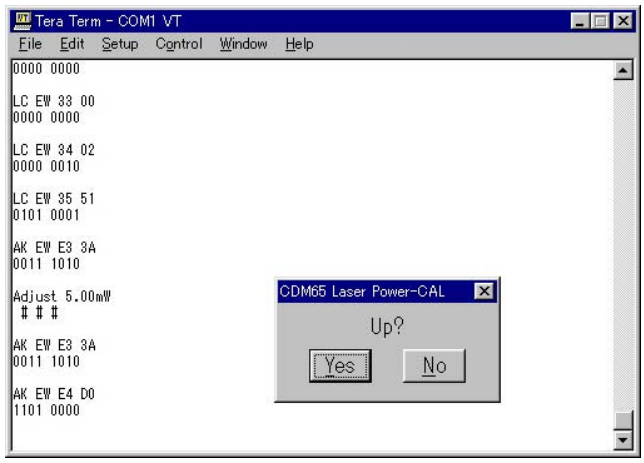
▲ Fig. 4-11

10) Adjust the laser output power as follows.
The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

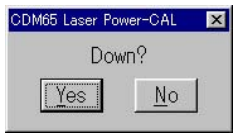
LEADER LPM-8001 : 4.6 +/- 0.1 mW (4.5 to 4.7 mW)

* To increase the laser output power
Press [Yes] of the “Up?” dialog box.
* To decrease the laser output power
Press [No] of the “Up?” dialog box
and then press [Yes] of the “Down?” dialog box.

Repeat until the laser output power satisfies the specification. (Fig. 4-12, 4-13)



▲ Fig. 4-12



▲ Fig. 4-13

* When the setting value is determined
Press [No] of the “Up?” dialog box
and then press [No] of the “Down?” dialog box
and press [Yes] of the “Save?” dialog box. (Fig. 4-14)

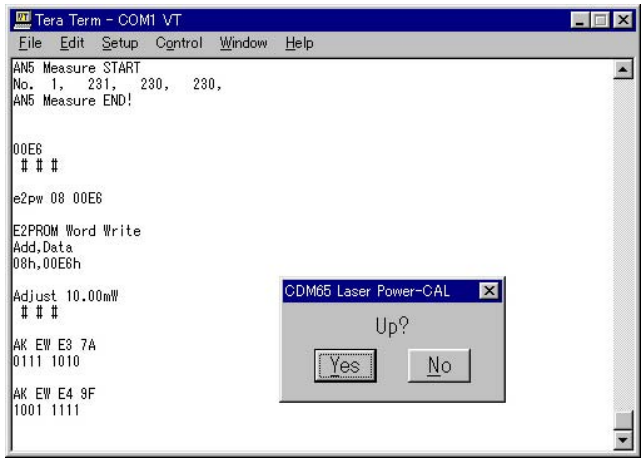
▲ Fig. 4-14

11) Adjust the laser output power as follows.
The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

LEADER LPM-8001 : 9.4 +/- 0.2 mW (9.2 to 9.6 mW)

* To increase the laser output power
Press [Yes] of the “Up?” dialog box.
* To decrease the laser output power
Press [No] of the “Up?” dialog box
and then press [Yes] of the “Down?” dialog box.

Repeat until the laser output power satisfies the specification. (Fig. 4-15, 4-16)



▲ Fig. 4-15

▲ Fig. 4-16

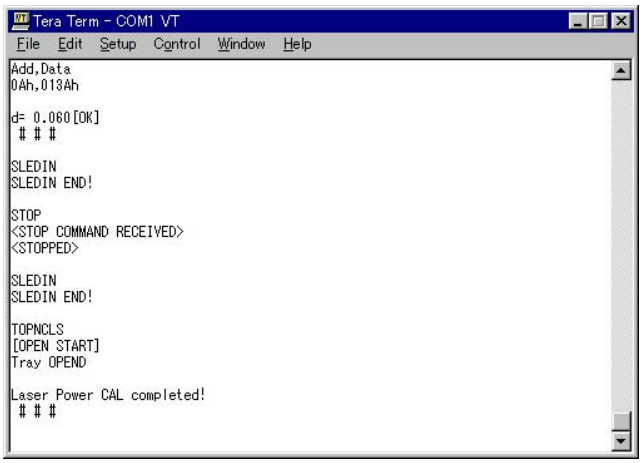
* When the setting value is determined
Press [No] of the “Up?” dialog box
and then press [No] of the “Down?” dialog box
and press [Yes] of the “Save?” dialog box. (Fig. 4-17)

▲ Fig. 4-17

12) When the display shown in Fig. 4-18 appears, remove probe of the laser power meter and press OK.

▲ Fig. 4-18

13) Check that the message “Laser Power CAL completed!” appears. (Fig. 4-19)(The tray opens.)
NG Judgment Result Indication



▲ Fig. 4-19

4-1-1. Sled Speed NG!

Contents : This message appears when the movement performance of sled is outside the specification.
Measure : Check if there is any abnormality in the sled drive circuit (IC171 peripheral) and the sled drive mechanism.

4-1-2. Power CAL NG!

Contents : This message appears when the laser emission intensity is outside the specification.
Measure : Check peripheral of CN101.
Replace KRM-220CAA.

4-2. CD/CD-R Playback Adjustment

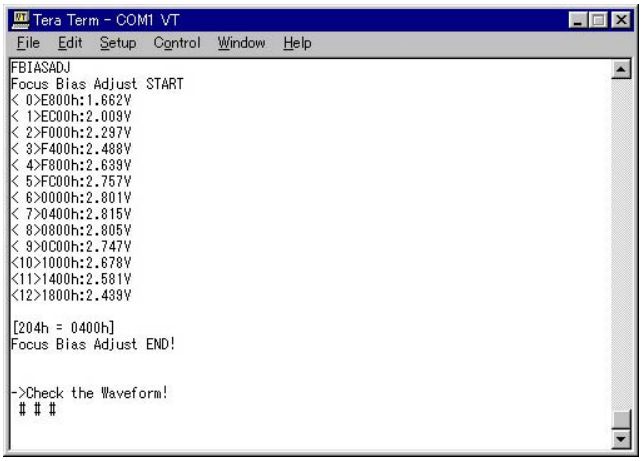
1) Select the menu as follows. Control → Macro, and select 02cdr_S.ttl.
Press “Open”.

2) Place the test CD disc PATD-012 on the tray as prompted by the display and press “OK”. (Fig. 4-20)(The tray closes.)

▲ Fig. 4-20

3) Press the “RESET” button (SW101) of the jig as prompted by the display.

4) As prompted by the message shown in Fig. 4-21, check that the waveform as shown in Fig. 4-22 appears on an oscilloscope.

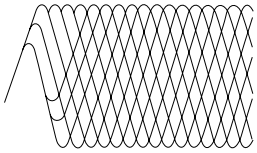


▲ Fig. 4-21

Note :The clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

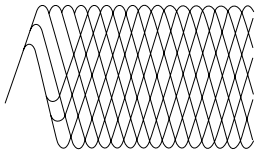


▲ Fig. 4-22

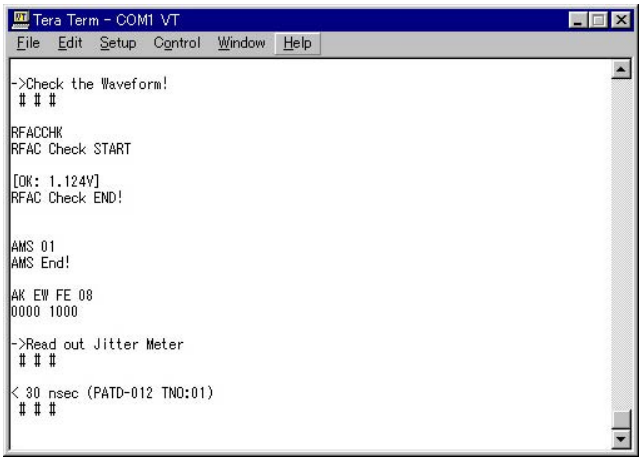
5) As prompted by the message shown in Fig. 4-24, check that the waveform as shown in Fig. 4-23 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-23

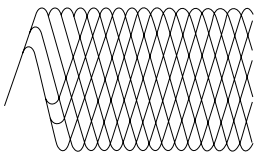


▲ Fig. 4-24

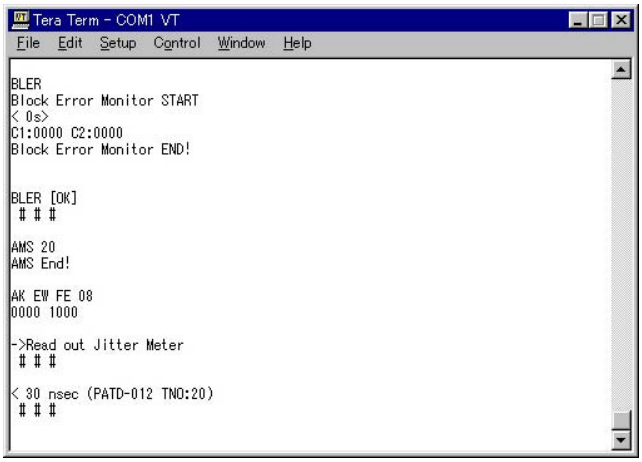
6) As prompted by the message shown in Fig. 4-26, check that the waveform as shown in Fig. 4-25 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-25



▲ Fig. 4-26

7) Check that the message "CDR PB-CAL completed!" appears. (The tray opens.)

NG Judgment Result Indication

4-2-1. Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) during playback is outside the specification.
Measure : Check if there is any abnormality in RBD2.
Replace KRM-220CAA.

4-3. CD-RW Playback Adjustment

1) Select the menu as follows. Control → Macro, and select 03cdr_S.ttl.
Press “Open”.

2) Place the test CD TCD-W091W on the tray as prompted by the display and press “OK”. (Fig. 4-27)(The tray closes.)

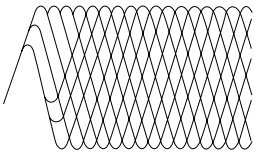
▲ Fig. 4-27

3) Press the “RESET” button (SW101) of the jig as prompted by the display.

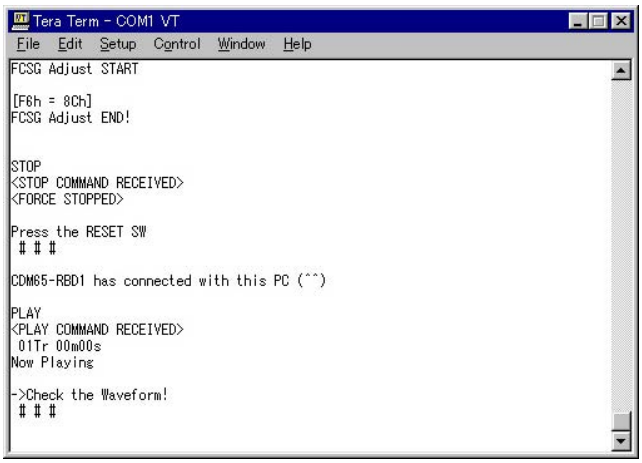
4) As prompted by the message shown in Fig. 4-29, check that the waveform as shown in Fig. 4-28 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-28

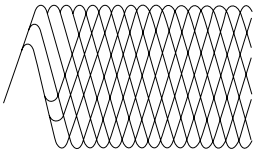


▲ Fig. 4-29

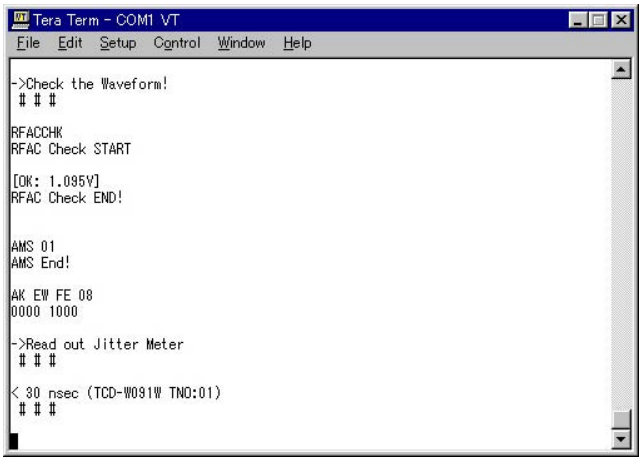
5) As prompted by the message shown in Fig. 4-31, check that the waveform as shown in Fig. 4-30 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-30

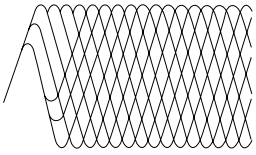


▲ Fig. 4-31

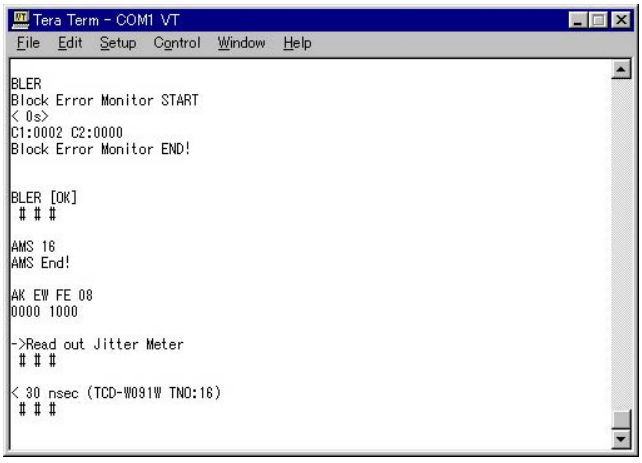
6) As prompted by the message shown in Fig. 4-33, check that the waveform as shown in Fig. 4-32 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

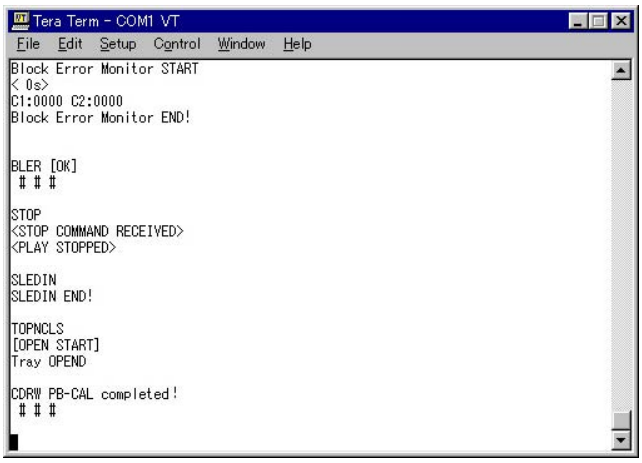


▲ Fig. 4-32



▲ Fig. 4-33

7) Check that the message “CDRW PB-CAL completed!” appears. (Fig. 4-34)(The tray opens.)



▲ Fig. 4-34

NG Judgment Result Indication

4-3-1. Playback Measurement NG!

Contents: This message appears when the BLER (Block Error Rate) during playback is outside the specification.
Measure : Check if there is any abnormality in RBD2.
Replace KRM-220CAA.

4-4. CD-R Recording Adjustment and Self Record/Playback Check

1) Select the menu as follows. Control → Macro, and select 04cdr_S.ttl.
Press “Open”.

2) Place the test CD disc PATD-012 on the Deck A. Place the recording CD-R disc (see Note: 4-4-1) on the tray (Deck B) as prompted by the display and press “OK”. (Fig. 4-35)
(The tray closes.)

▲ Fig. 4-35

Note : 4-4-1
The disc to be used in this step.

* Use the CD-R disc CRM74 for audio, that is manufactured by Sony.
* The disc that is used by this step cannot be used for the general purposes and for the purpose of operation check of the RCD series equipment. The disc that is used for the general purposes or for the purpose of operation check of the RCD series equipment, cannot be used in this step.
* If the recording is interrupted by any reasons during the recording operation (i.e., the WRITE POWER ON LED of the jig is lighting), the disc cannot be used any more in the subsequent step. Use the un-used brand new disc and repeat this step from the very beginning again.

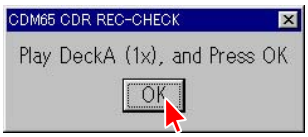
3) When the disc that is used in step 2) is the disc that has been used in the electrical adjustment in the past. ..... Press “Yes”.

When the disc that is used in step 2) is a completely blank disc. ..... Press “No”. (Fig. 4-36)

▲ Fig. 4-36

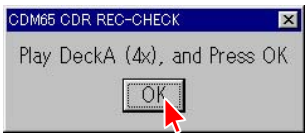
Note: The recording CD-R disc can be used only for the electrical adjustment. The recording CD-R disc must be controlled so that it must not be used for any other applications.

4) Press the ▷ button of Deck A. After playback starts, press "OK". (Fig. 4-37)



▲ Fig. 4-37

5) When the message as shown in Fig. 4-38 appears some seconds later, stop playback (1X) and select 4x of the test mode (refer to page 21, Play Speed Selection Mode (Deck A)) Playback Speed. Then press the ▷ button of Deck A. After playback starts, press "OK".

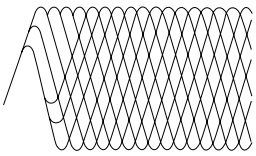


▲ Fig. 4-38

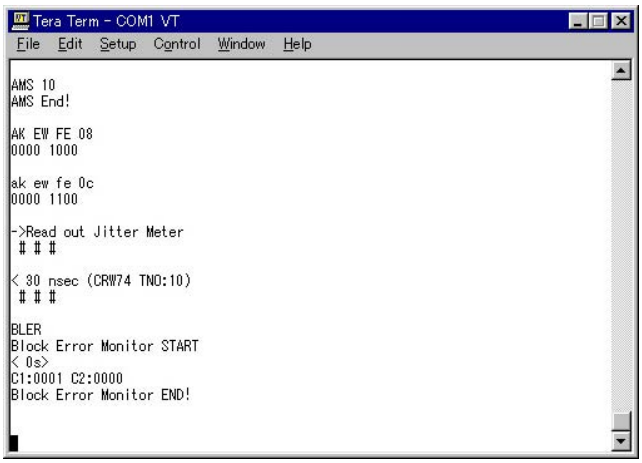
6) As prompted by the message shown in Fig. 4-40, check that the waveform as shown in Fig. 4-39 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-39

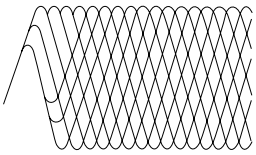


▲ Fig. 4-40

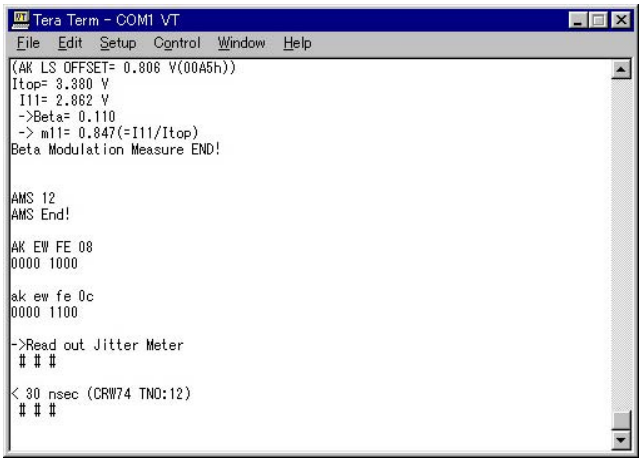
7) As prompted by the message shown in Fig. 4-42, check that the waveform as shown in Fig. 4-41 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-41



▲ Fig. 4-42

8) Check that the message "CDR REC-CHECK completed!" appears. (The tray opens.)
Stop playback (4X) and exit from the test mode (Deck A). (refer to page 21.)
NG Judgment Result Indication

4-4-1. CD-R Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) *Beta/m11 of the track that is recorded and played back, is outside the specification.
Measure : Check if there is any abnormality in RBD2.
Replace KRM-220CAA.

4-5. CD-RW Recording Adjustment and Self Record/Playback Check

1) Select the menu as follows. Control → Macro, and select 05cdrw_S.ttl.
Press “Open”.

2) Place the test CD disc PATD-012 on the Deck A. Place the recording CD-RW disc (see Note: 4-5-1) on the tray (Deck B) as prompted by the display and press “OK”. (Fig. 4-43)
(The tray closes.)

▲ Fig. 4-43

Note : 4-5-1
The disc to be used in this step.

* Use the CD-RW disc CWM74 for audio, that is manufactured by Sony.
* The disc that is used by this step cannot be used for the general purposes and for the purpose of operation check of the RCD series equipment as it is. The disc that is used for the general purposes or for the purpose of operation check of the RCD series equipment, cannot be used in this step.
When you want to use the CD-RW disc for other applications, erase the CD-RW disc.
* If the recording is interrupted by any reasons during the recording operation (i.e., the WRITE POWER ON LED of the jig is lighting), the disc cannot be used any more in the subsequent step. In such a case, erase the CD-RW disc and repeat this step from the very beginning again.

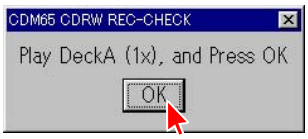
3) When the disc that is used in step 2) is the disc that has been used in the electrical adjustment in the past. ..... Press “Yes”.

When the disc that is used in step 2) is a completely blank disc. ..... Press “No”. (Fig. 4-44)

▲ Fig. 4-44

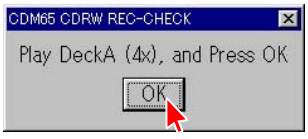
Note: The recording CD-RW disc can be used only for the electrical adjustment. The recording CD-RW disc must be controlled so that it must not be used for any other applications.

4) Press the ▷ button of Deck A. After playback starts, press “OK”. (Fig. 4-45)



▲ Fig. 4-45

5) When the message as shown in Fig. 4-46 appears some seconds later, stop playback (1X) and select 4x of the test mode (refer to page 21, Play Speed Selection Mode (Deck A)) Playback Speed. Then press the ▷ button of Deck A. After playback starts, press “OK”.

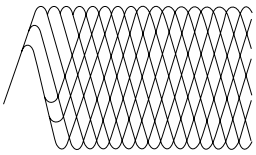


▲ Fig. 4-46

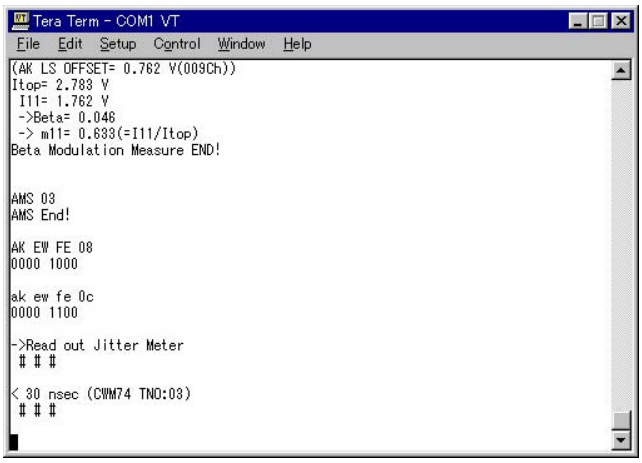
6) As prompted by the message shown in Fig. 4-48, check that the waveform as shown in Fig. 4-47 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-47

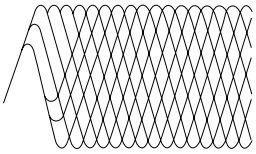


▲ Fig. 4-48

7) As prompted by the message shown on display, check that the waveform as shown in Fig. 4-49 appears on an oscilloscope.

RF signal waveform

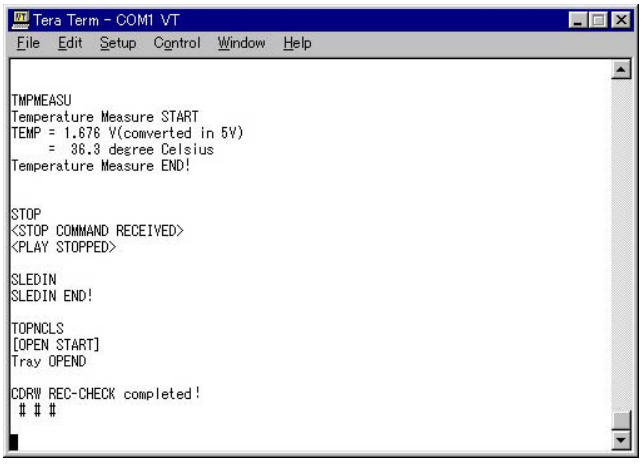
VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-49

8) Check that the message “CDRW REC-CHECK completed!” appears. (Fig. 4-50)(The tray opens.)
Stop playback (4X) and exit from the test mode (Deck A).
(refor to page 21.)

NG Judgment Result Indication



▲ Fig. 4-50

4-5-1. CD-RW Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) *Beta/m11 of the track that is recorded and played back, is outside the specification.
Measure : Check if there is any abnormality in RBD2.
Replace KRM-220CAA.

4-6. VWDC Check

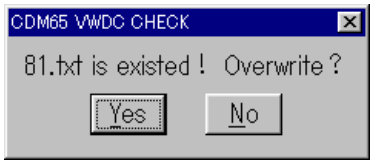
1) Select the menu as follows. Control → Macro, and select 06vwdc_S.ttl.
Press “Open”.

2) As prompted by the message shown in Fig. 4-51, remove the disc from the tray and press “OK”.

▲ Fig. 4-51

3) Because this step saves the result of electrical adjustment in a file, there can be a case that the dialog as shown in Fig. 4-52 appears.

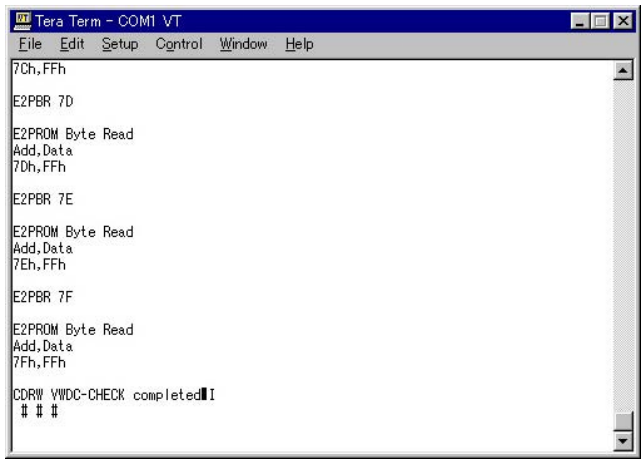
When you want to overwrite ..... Press “Yes”.
When you want to create a new file ..... Press “No”.



▲ Fig. 4-52

4) Check that the message “CDRW VWDC-CHECK completed!” appears. (Fig. 4-53)

NG Judgment Result Indication



▲ Fig. 4-53

4-6-1. EEPROM Write NG!

Contents : This message appears when writing data into EEPROM fails.
Measure : When the steps of 01ldp_S.ttl through 05cdrw_S.ttl have no problem and the error occurs only in this step, it is assumed that an error has occurred momentarily in the interface between PC and CDM65. Therefore, repeat execution of 06vwdc_S.ttl again.

4-6-2. VWDC judge [Line Top - End] [NG]

Contents : This message appears when the VWDC value is outside the specification.
Measure : It is assumed that the optical laser unit has deteriorated. If this error occurs after the KRM-220CAA is replaced, the adjustment error in the step of 01ldp_S.ttl is assumed. Therefore, repeat execution of steps of 01ldp_S.ttl through 05cdrw_S.ttl again. In the cases other than above, check if the laser power adjustment is correctly performed or not, using LDPtestL_S.ttl.

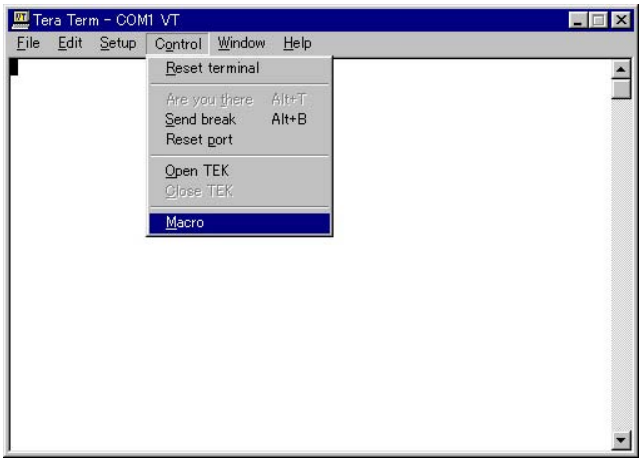
4-7. NG Message List

Message	Cause
Tray OPEN NG!	The tray has not opened within the specified time.
Tray Close NG!	The tray has not closed within the specified time.
SLEDIN NG!	The sled has not moved toward inner circumference within the specified time.
SLEDOUT NG!	The sled has not moved toward outer circumference within the specified time.
RIDR NG!	The RID information could not be read out within the specified time.
SNread (1) NG!	The SN (1) information could not be read out within the specified time.
SNread (2) NG!	The SN (2) information could not be read out within the specified time.
SNread (3) NG!	The SN (3) information could not be read out within the specified time.
FBIASADJ NG!	The Focus Bias Adjustment has not completed within the specified time.
FEOSADJ NG!	The FE Offset Adjustment has not completed within the specified time.
FESAMPADJ NG!	The FE Amplitude Adjustment has not completed within the specified time.
RFACCHK NG!	The RFAC amplitude is abnormal or the adjustment has not completed within the specified time.
RPINWADJ1 NG!	The Read Power (during Write1) Adjustment has not completed within the specified time.
RPINWADJ2 NG!	The Read Power (during Write2) Adjustment has not completed within the specified time.
SERVOSET NG!	The Servo Setting has not completed within the specified time.
TSa NG!	The ATIME Search has not completed within the specified time.
PLAYSW NG!	The Play operation has not started within the specified time.
STOP NG!	The Stop operation has not completed within the specified time.
AMS NG!	The AMS operation has not completed within the specified time.
ATIPPLAY NG!	The ATIP Play operation has not started within the specified time.
END TNO get NG!	The record-end track information could not be obtained within the specified time.
LEADOUT info.get NG!	The record-end time information could not be obtained within the specified time.
Invalid EndTrackNo./LeadoutTime !	The illegal record-end track and its time information were obtained.
Use the Blank disc	The disc exceeding the allowable limit is used.
DIR unlock!	The equipment could not be synchronized with the signal connected to DIN2.
RWP NG!	The CD-R Write Power setting has not completed within the specified time.
RWWP NG!	The CD-RW Write Power setting has not completed within the specified time.
REC NG!	The record operation could not be started within the specified time.

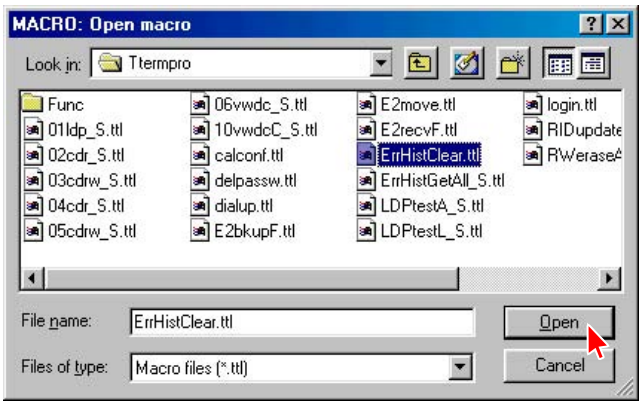
5. Operation Check

5-1. Erasing the Error History

1) Select the menu as follows. Control → Macro, and select ErrHistClear.ttl.
Press “Open”. (Fig. 5-1, 5-2)



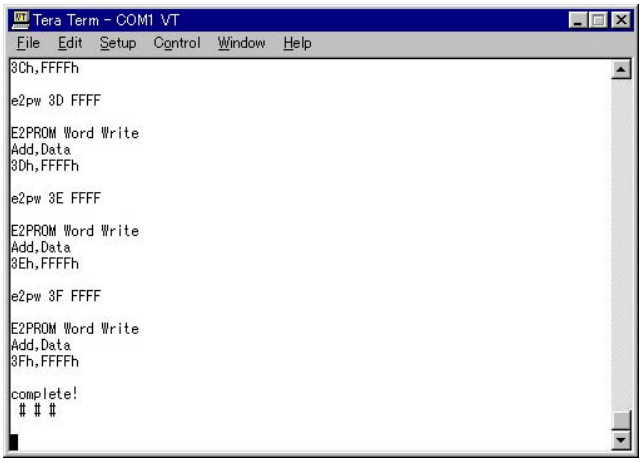
▲ Fig. 5-1



▲ Fig. 5-2

2) Press the “RESET” button (SW101) of the jig as prompted by the display.

3) Check that the message “completed!” appears. (Fig. 5-3)



▲ Fig. 5-3

5-2. Playback Check using TCD-W032W

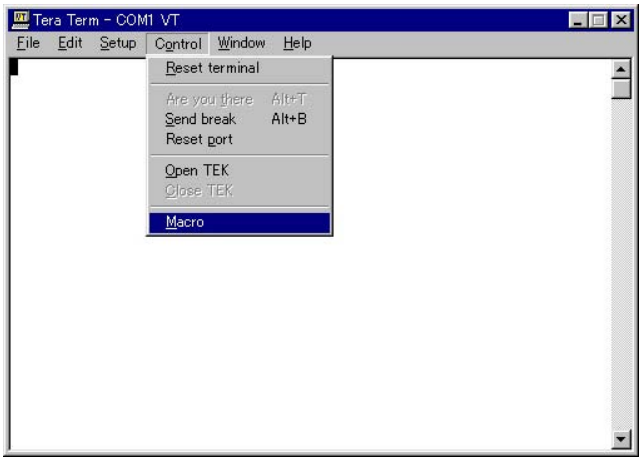
1) Install the CDM65 in the equipment and install the TCD-W032W in Deck B.
2) Rotate the [⏮ AMS ⏭] (Deck B) knob to select the track 16. Start playback by pressing the same knob or by pressing the [▷] (Deck B) button.
3) Perform playback for 10 seconds or more and confirm that there is no abnormality such as sound skipping and others.

Supplementary Information

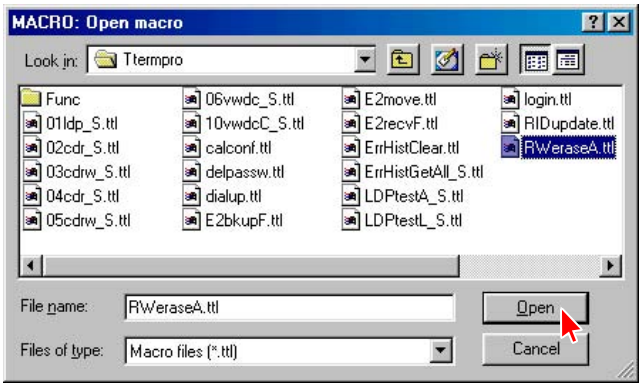
Method to Erase the CD-RW Disc

* Erase it in the following procedure, to reuse the CD-RW disc to electrical adjustment, or to use a disc other than blank.
* Be sure to erase it in the following procedure, to use the disc used for electrical adjustment for other uses.

1) Select the menu as follows. Control → Macro, and select RWeraseA.ttl.
Press “Open”. (Fig. A-1, A-2)

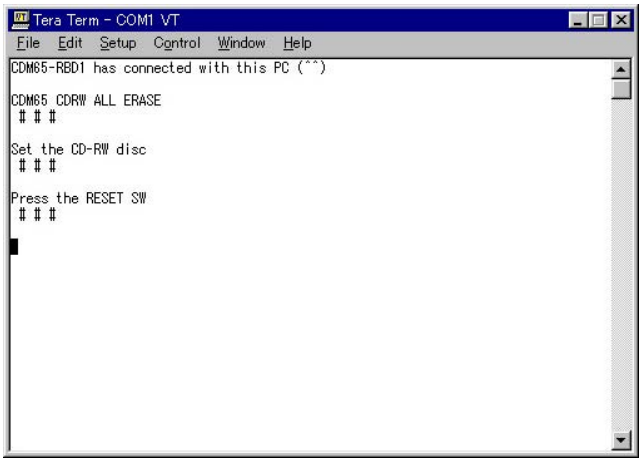


▲ Fig. A-1



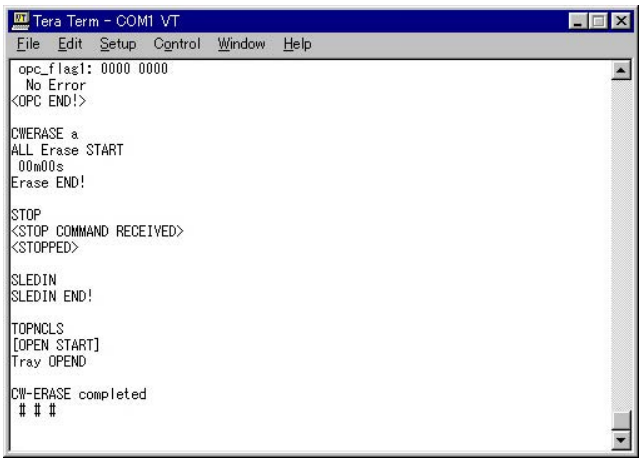
▲ Fig. A-2

2) Press the “RESET” button (SW101) of the jig as prompted by the display. (Fig. A-3)


Tera Term - COM1 VT
File Edit Setup Control Window Help
CDM65-RBD1 has connected with this PC (^^)
CDM65 CDRW ALL ERASE
# # #
Set the CD-RW disc
# # #
Press the RESET SW
# # #

▲ Fig. A-3

3) Check that the time display as shown by the arrow mark in Fig. A-4 is updated after a while.



▲ Fig. A-4

4) When update of time display is stopped and rotation of spindle is stopped, press the STOP button (SW501) of the Jig, and then press the EJECT button (SW508) of the jig to remove the disc.

SECTION 6
DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this necessary note is printed in each block.)

For schematic diagrams.
Note:

- All capacitors are in μF unless otherwise noted. p : pF. 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

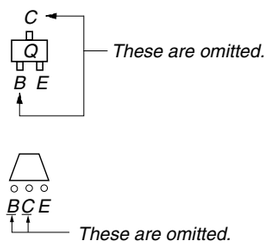
- ▬▬ : B+ Line.
- ▬ ▬ ▬ : B– Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  No mark : STOP
- Voltages are taken with a VOM (Input impedance 10 MΩ).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  : CD PLAY
  : CD-R PLAY (ANALOG OUT)
  : CD-R REC (ANALOG IN)
  : CD-R REC (CD)

For printed wiring boards.
Note:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ○ : Through hole.
- ▬ : Pattern from the side which enables seeing.

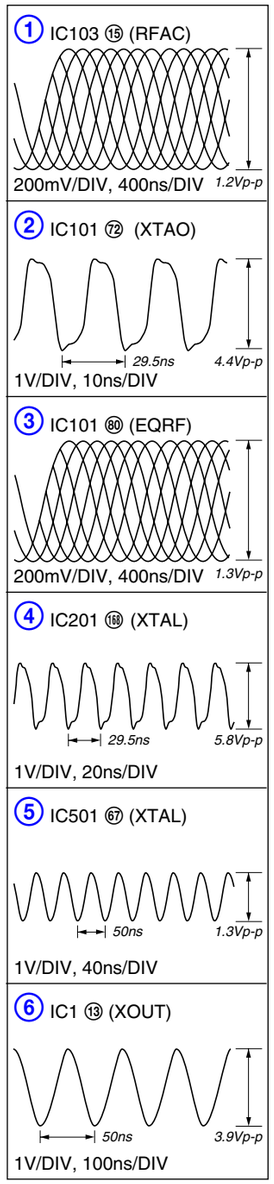
(The other layers' patterns are not indicated.)

• Indication of transistor

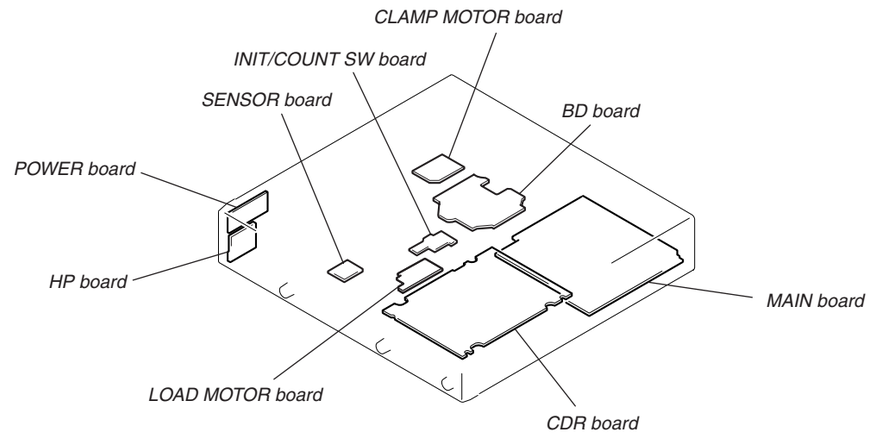


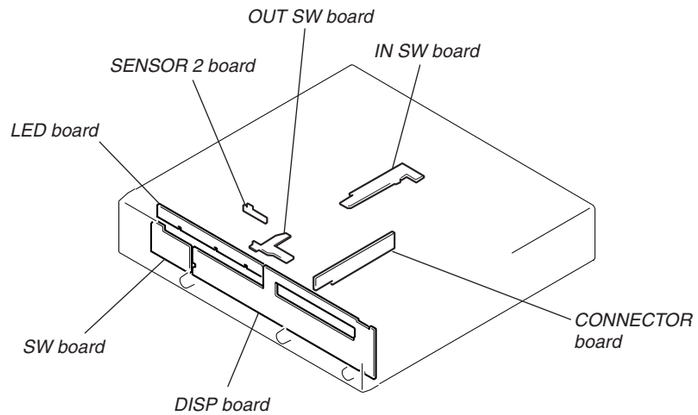
Caution:	
Pattern face side: (Side A)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side B)	Parts on the parts face side seen from the parts face are indicated.

• Waveform

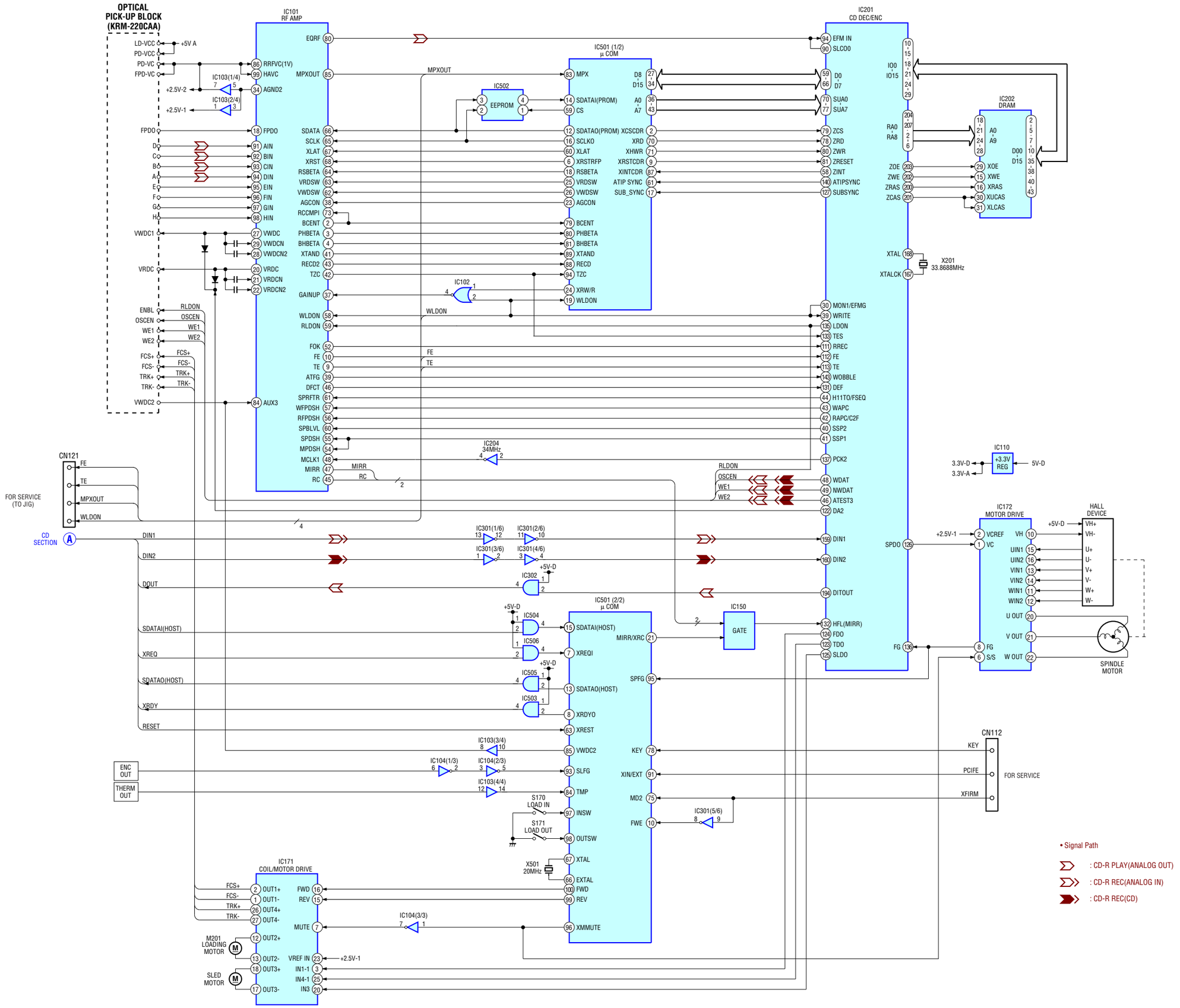


• Circuit Board Location

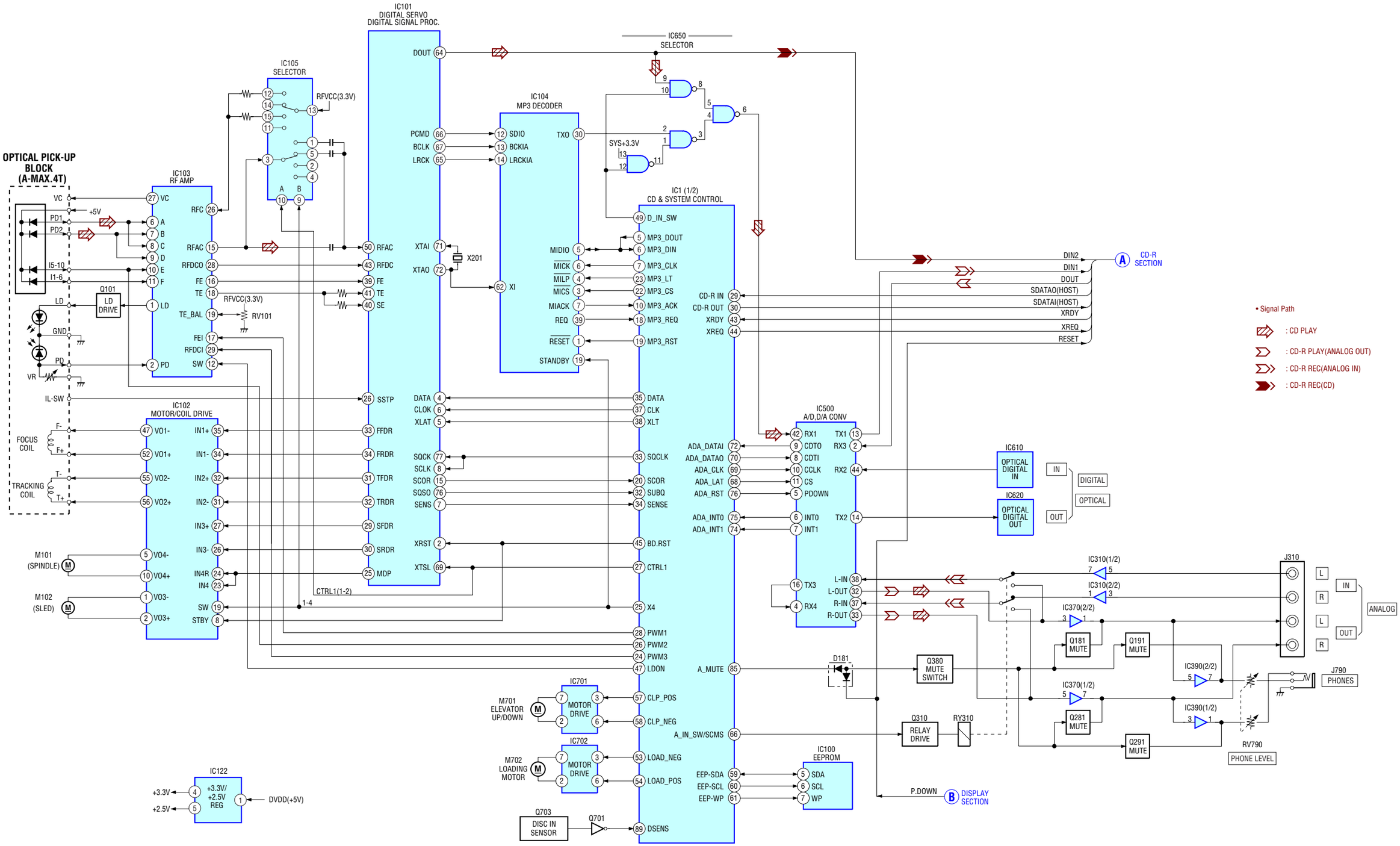




6-1. Block Diagrams – CD-R Section –

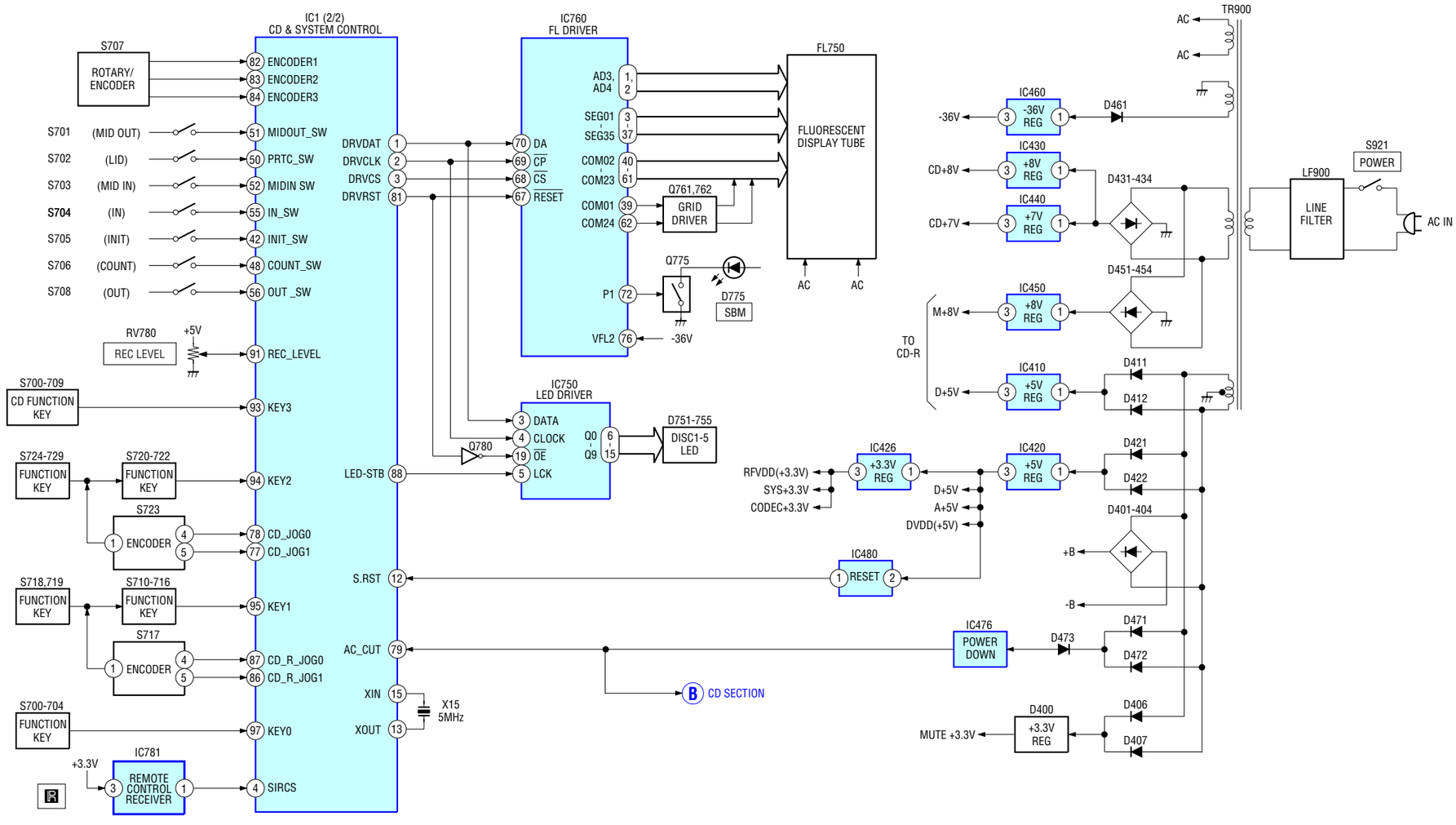


– CD Section –


OPTICAL PICK-UP BLOCK (A-MAX.4T)
VC
+5V
PD1
PD2
I5-10
I1-6
LD
GND
PD
VR
IL-SW
FOCUS COIL
F-
F+
TRACKING COIL
T-
T+
M101 (SPINDLE)
M102 (SLED)
Q101
LD DRIVE
IC103
RF AMP
IC102
MOTOR/COIL DRIVE
IC105
SELECTOR
RFVCC(3.3V)
RV101
IC101
DIGITAL SERVO
DIGITAL SIGNAL PROC.
CTRL1(1-2)
1-4
IC104
MP3 DECODER
X201
IC650
SELECTOR
SYS+3.3V
IC1 (1/2)
CD & SYSTEM CONTROL
IC500
A/D,D/A CONV
IC610
OPTICAL DIGITAL IN
IC620
OPTICAL DIGITAL OUT
IC310(1/2)
IC310(2/2)
IC370(2/2)
IC370(1/2)
IC390(2/2)
IC390(1/2)
Q181 MUTE
Q191 MUTE
Q281 MUTE
Q291 MUTE
J310
J790
PHONES
RV790
PHONE LEVEL
ANALOG
IN
OUT
DIGITAL
OPTICAL
L
R
D181
Q380 MUTE SWITCH
Q310 RELAY DRIVE
RY310
P.DOWN
DISPLAY SECTION
CD-R SECTION
IC701
M701 ELEVATOR UP/DOWN
IC702
M702 LOADING MOTOR
MOTOR DRIVE
IC122
+3.3V/ +2.5V REG
+3.3V
+2.5V
DVDD(+5V)
Q703
DISC IN SENSOR
Q701
IC100
EEPROM
SDA
SCL
WP
• Signal Path
: CD PLAY
: CD-R PLAY(ANALOG OUT)
: CD-R REC(ANALOG IN)
: CD-R REC(CD)

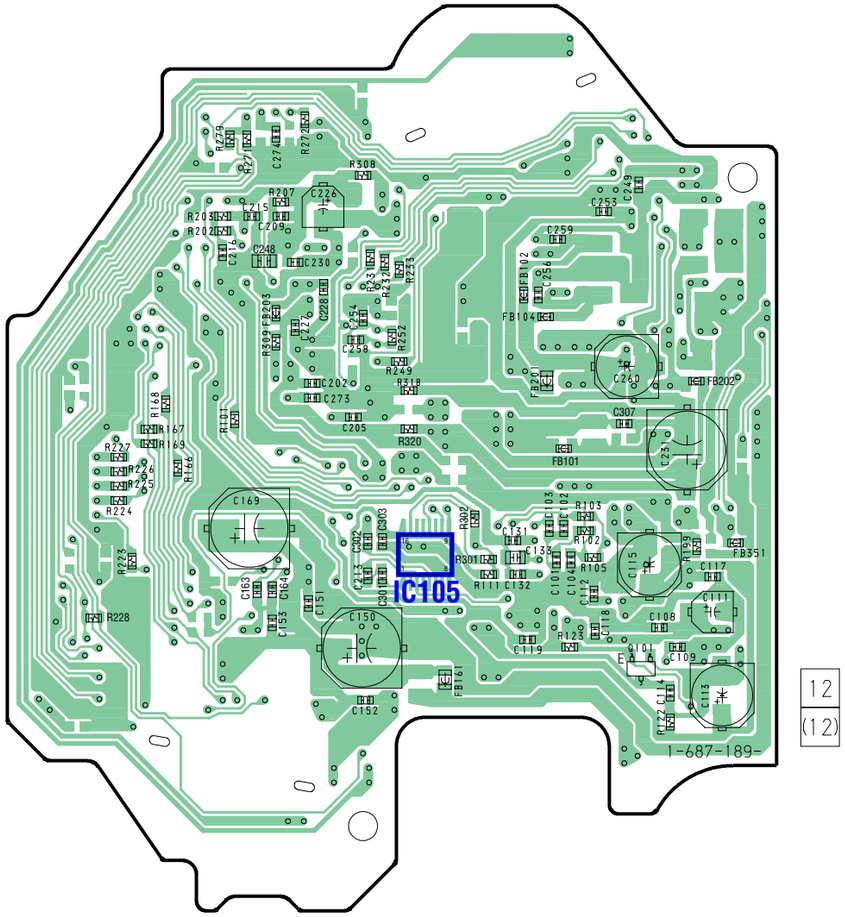
RCD-W500C

– POWER/DISPLAY Section –

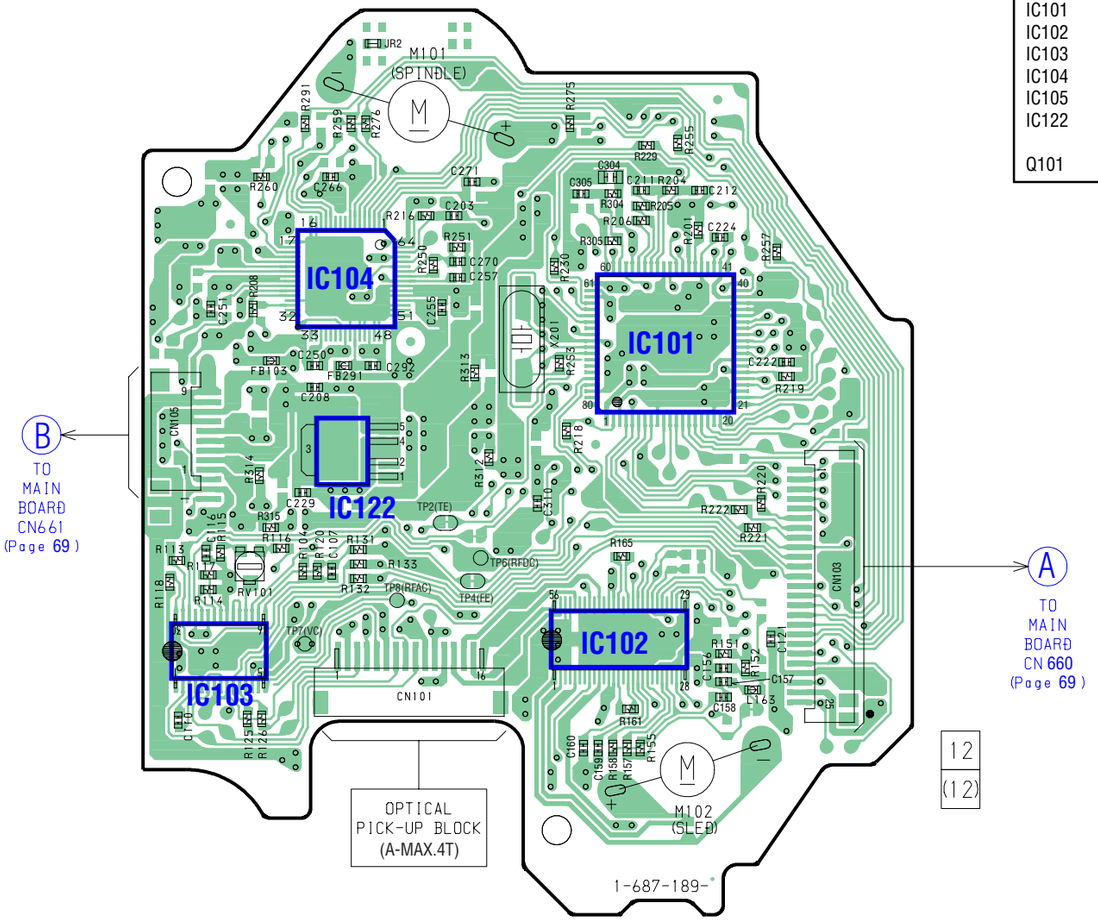


6-2. Printed Wiring Boards – BD Section – • See page 55 for Circuit Boards Location. • : Uses unleaded solder.

【 BD BOARD 】(SIDE A)



【 BD BOARD 】(SIDE B)

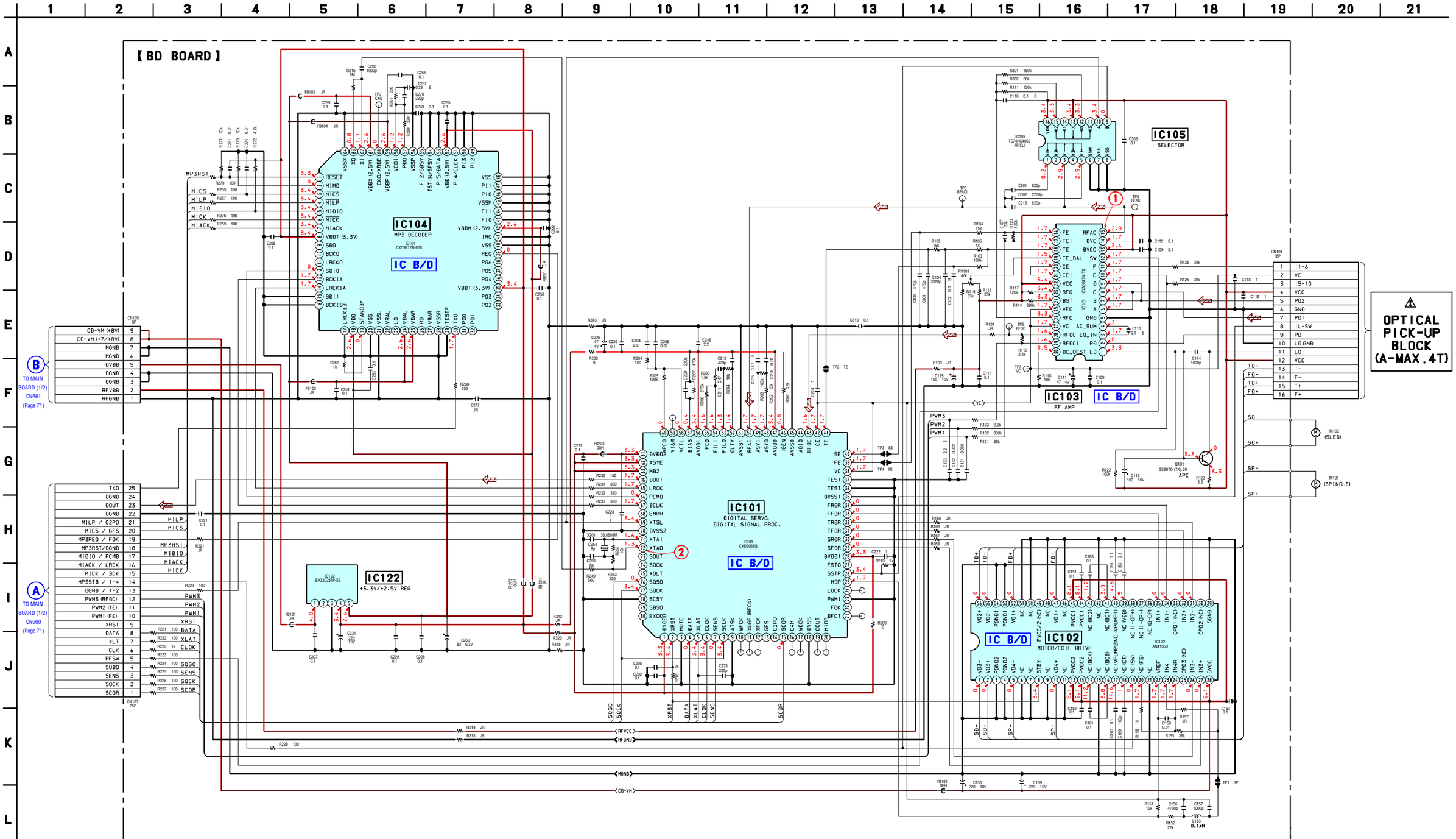


• **Semiconductor Location**

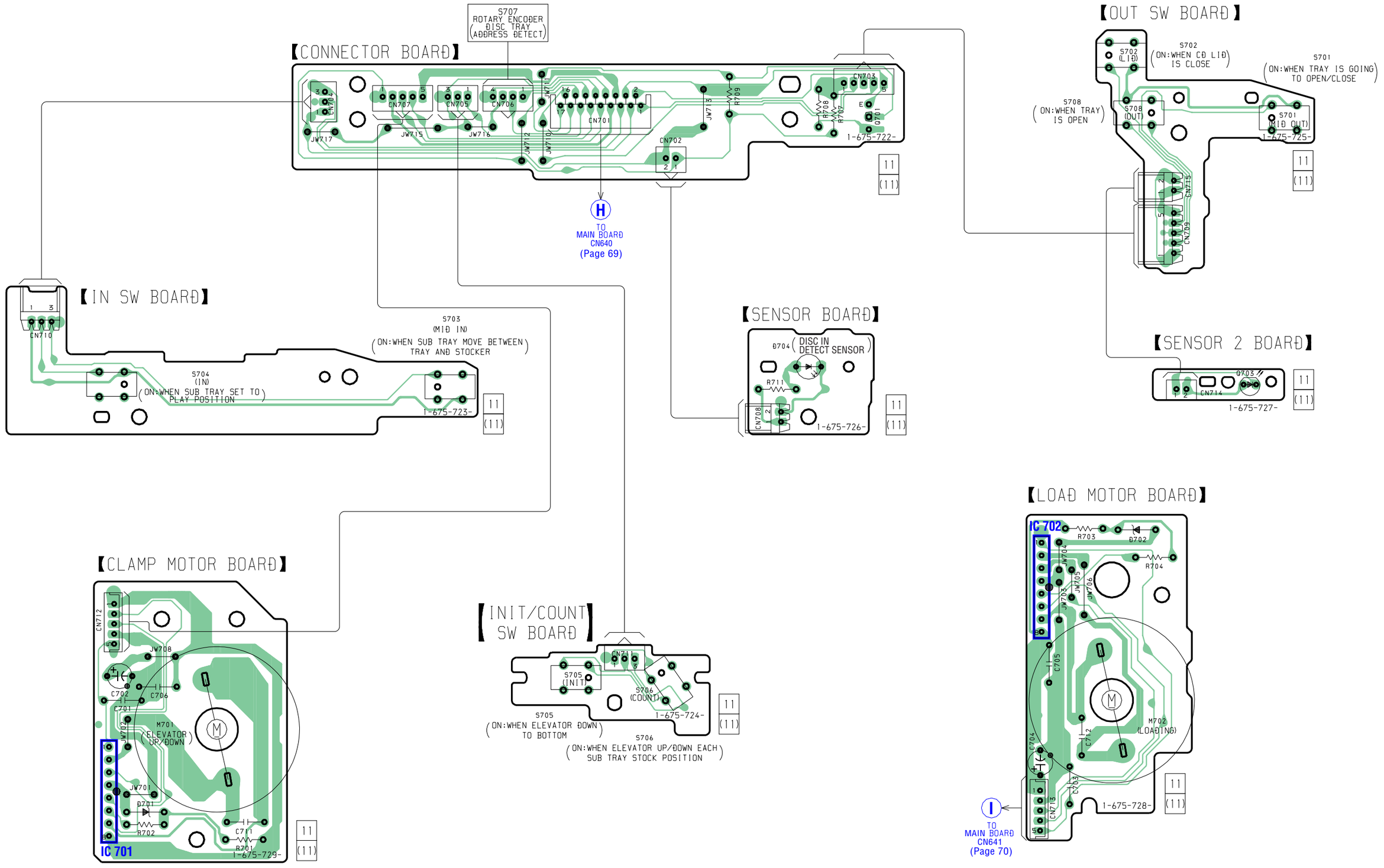
Ref. No.	Location
IC101	B-6
IC102	C-6
IC103	D-5
IC104	B-5
IC105	C-2
IC122	C-5
Q101	C-3

6-3. Schematic Diagrams – BD Section –

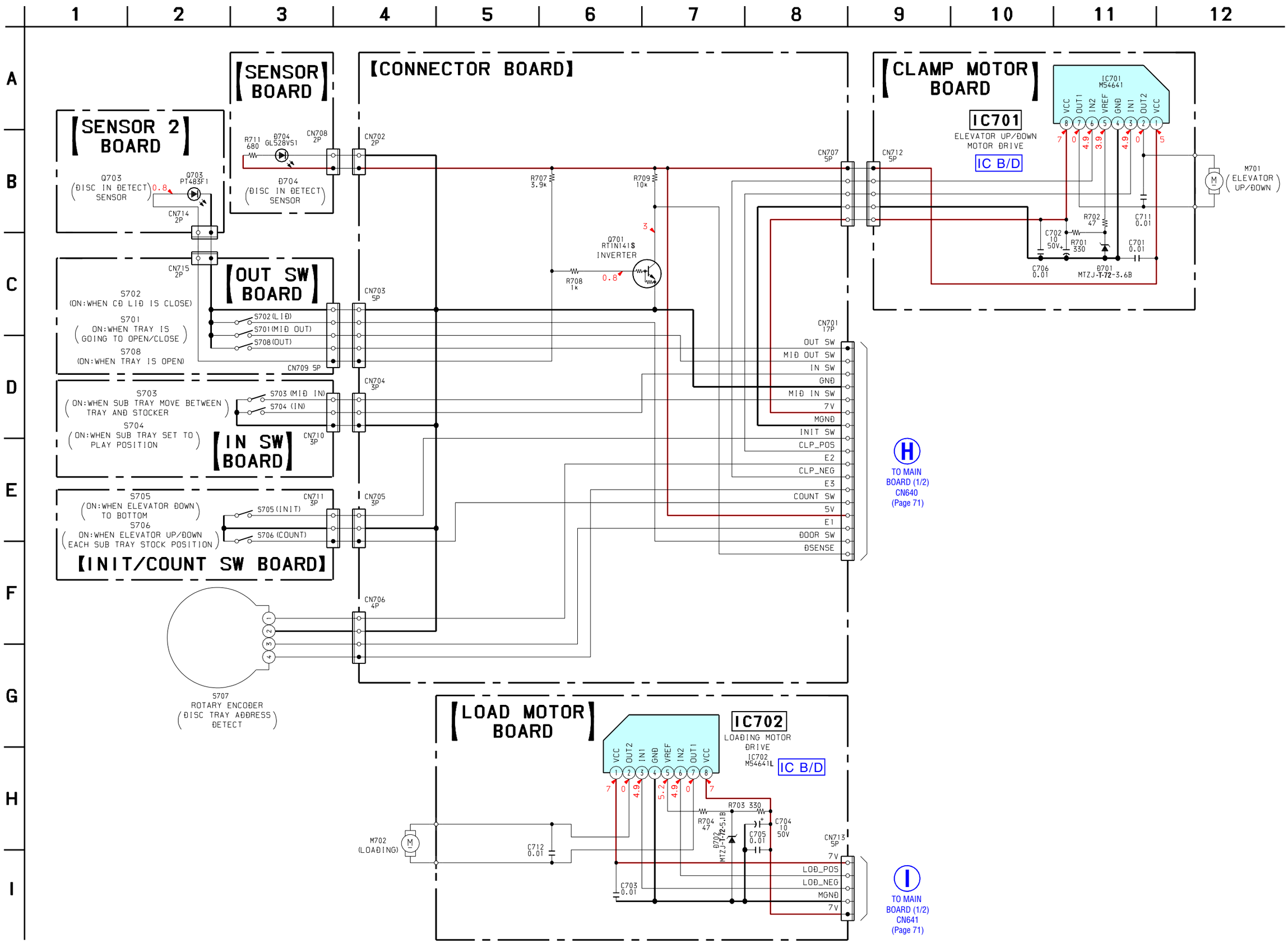
• See page 55 for Waveform. • See page 77 to 79 for IC Block Diagrams.



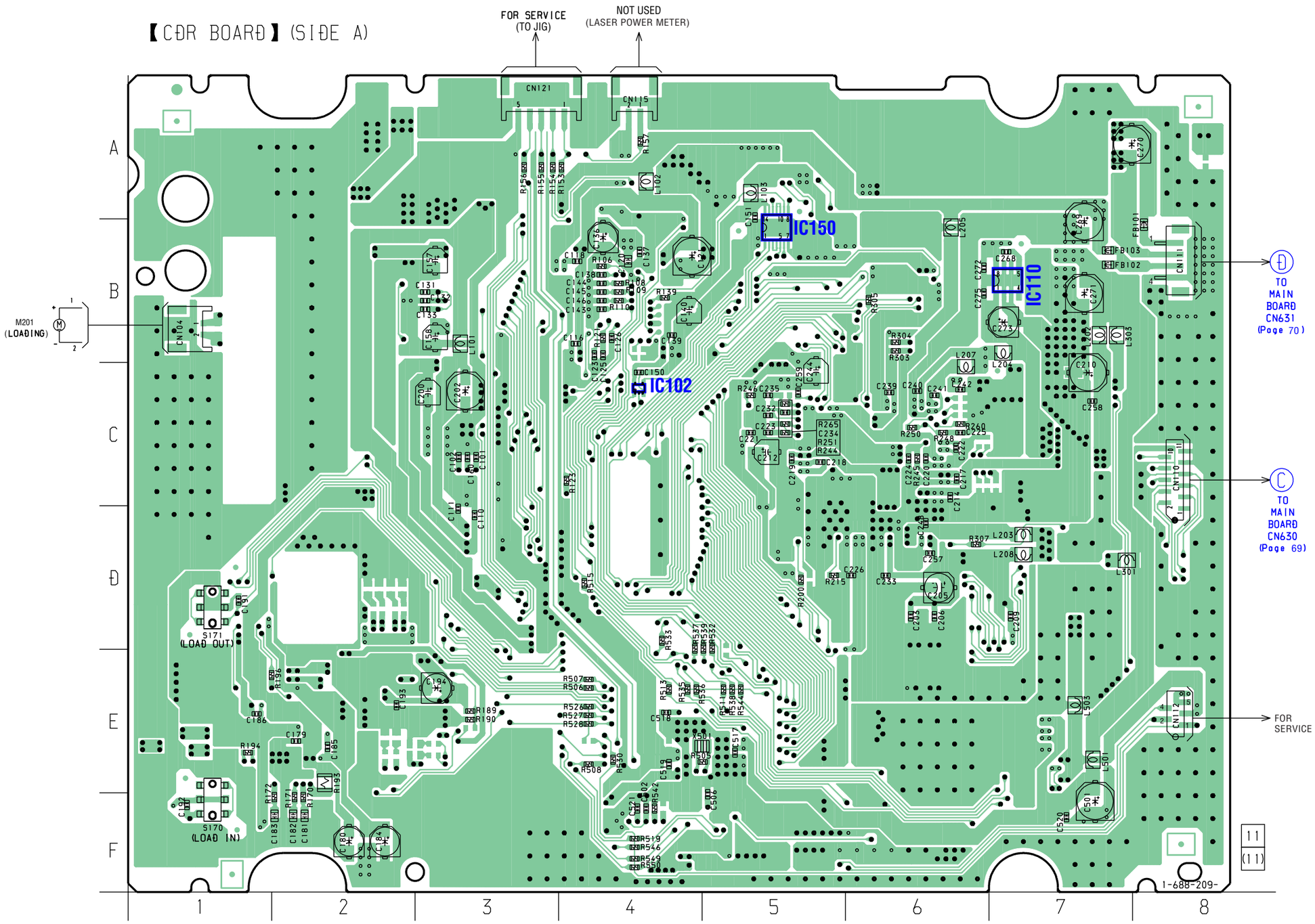
6-4. Printed Wiring Boards – SENSER/MOTOR/SW Section – • See page 55 for Circuit Boards Location.



6-5. Schematic Diagrams – SENSER/MOTOR/SW Section – • See page 83 for IC Block Diagrams.



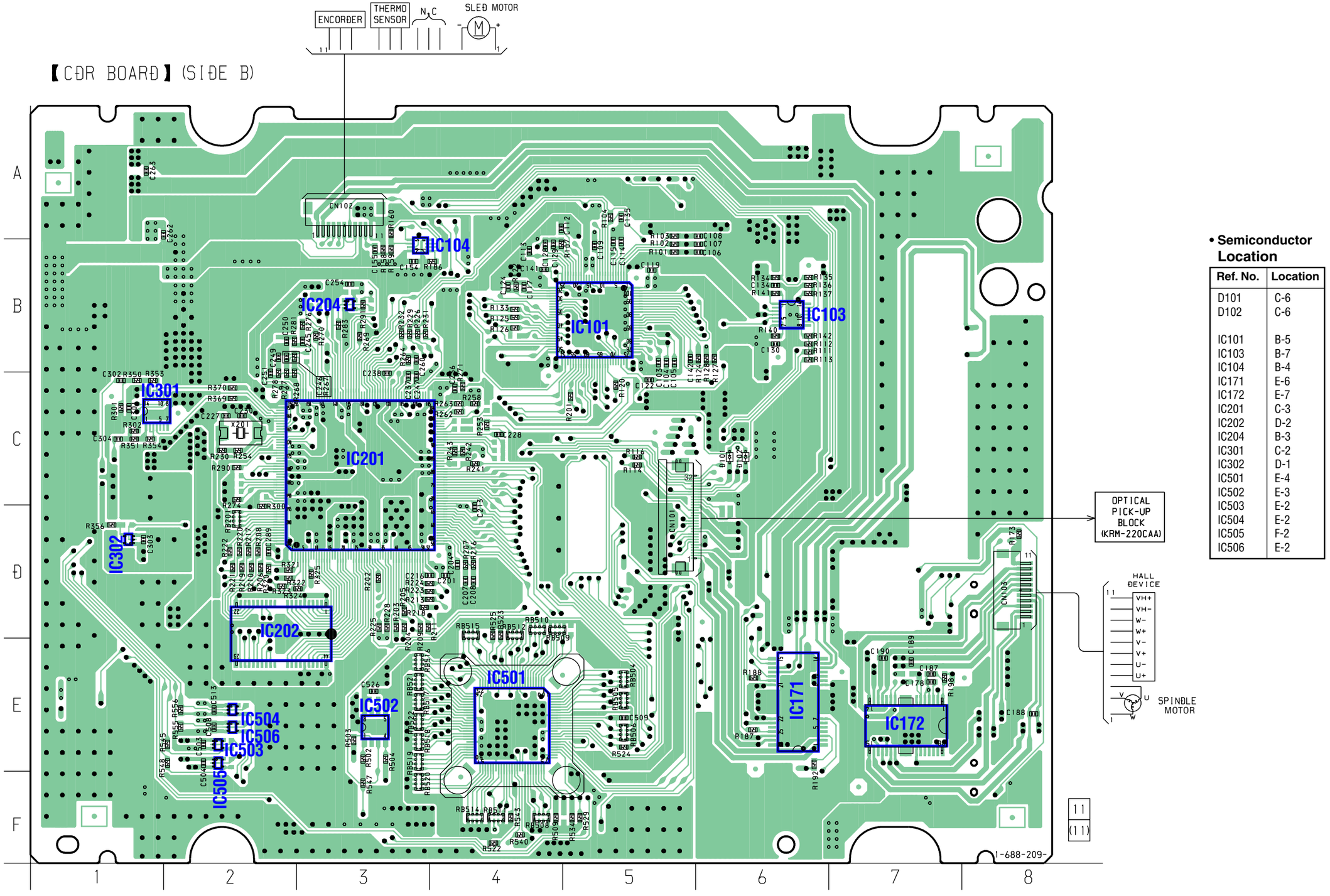
6-6. Printed Wiring Boards – CD-R Section (Side A) – • See page 55 for Circuit Boards Location. • : Uses unleaded solder.



• **Semiconductor Location**

Ref. No.	Location
IC102	C-4
IC110	B-7
IC150	B-5

6-7. Printed Wiring Boards – CD-R Section (Side B) – • See page 55 for Circuit Boards Location. • : Uses unleaded solder.

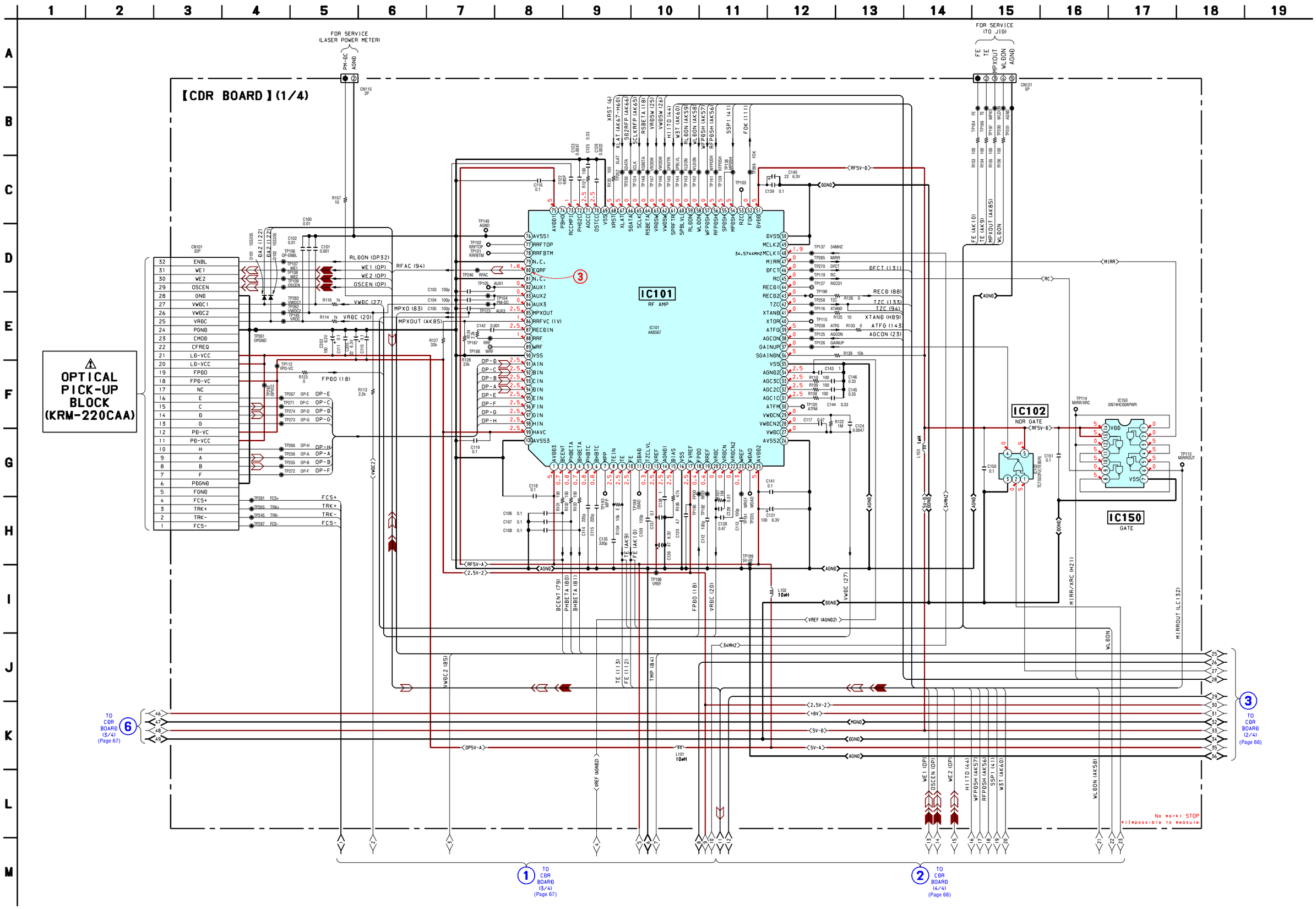


• **Semiconductor Location**

Ref. No.	Location
D101	C-6
D102	C-6
IC101	B-5
IC103	B-7
IC104	B-4
IC171	E-6
IC172	E-7
IC201	C-3
IC202	D-2
IC204	B-3
IC301	C-2
IC302	D-1
IC501	E-4
IC502	E-3
IC503	E-2
IC504	E-2
IC505	F-2
IC506	E-2

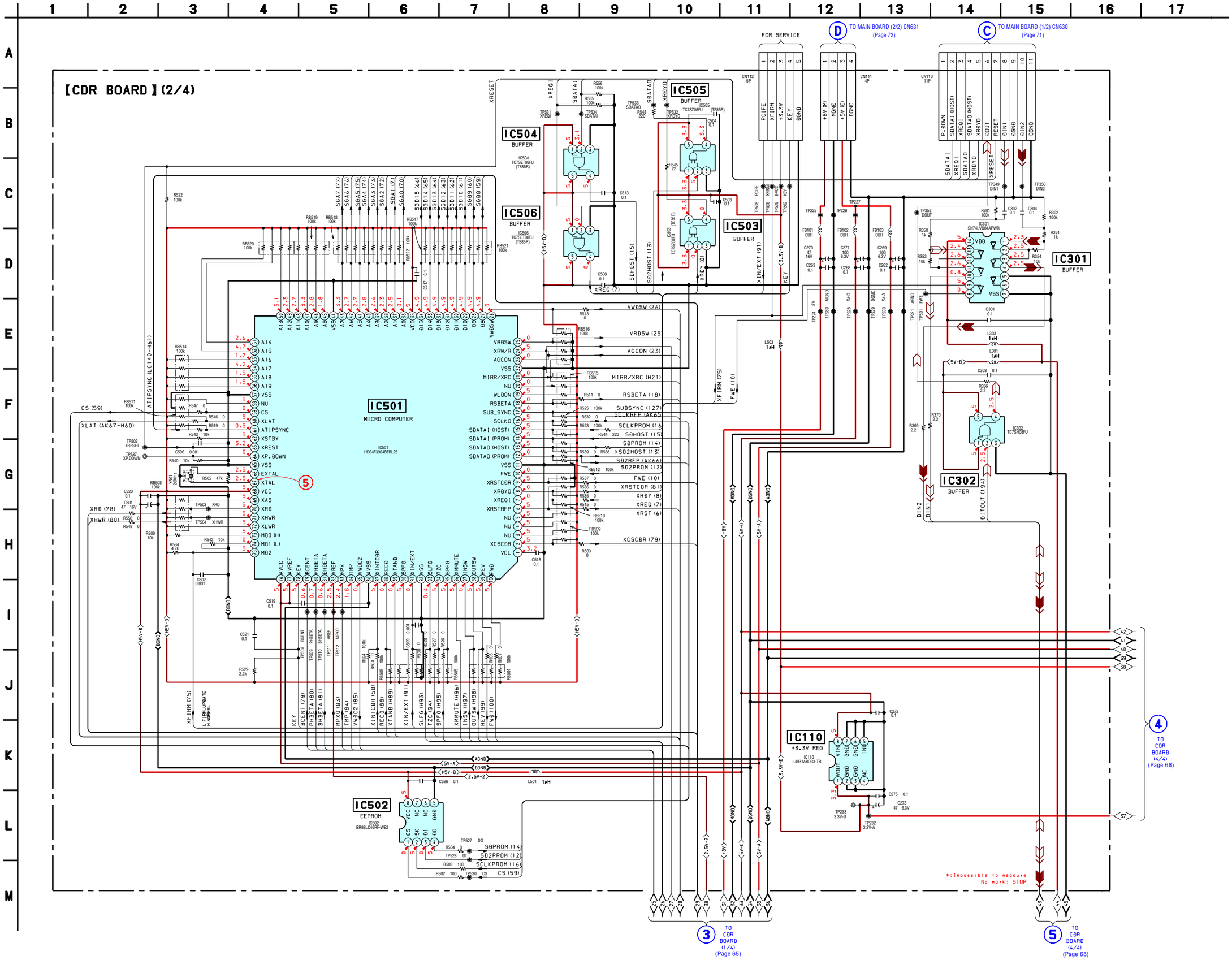
6-8. Schematic Diagrams – CD-R Section (1/4) –

• See page 55 for Waveform. • See page 86 for IC Pin Function.

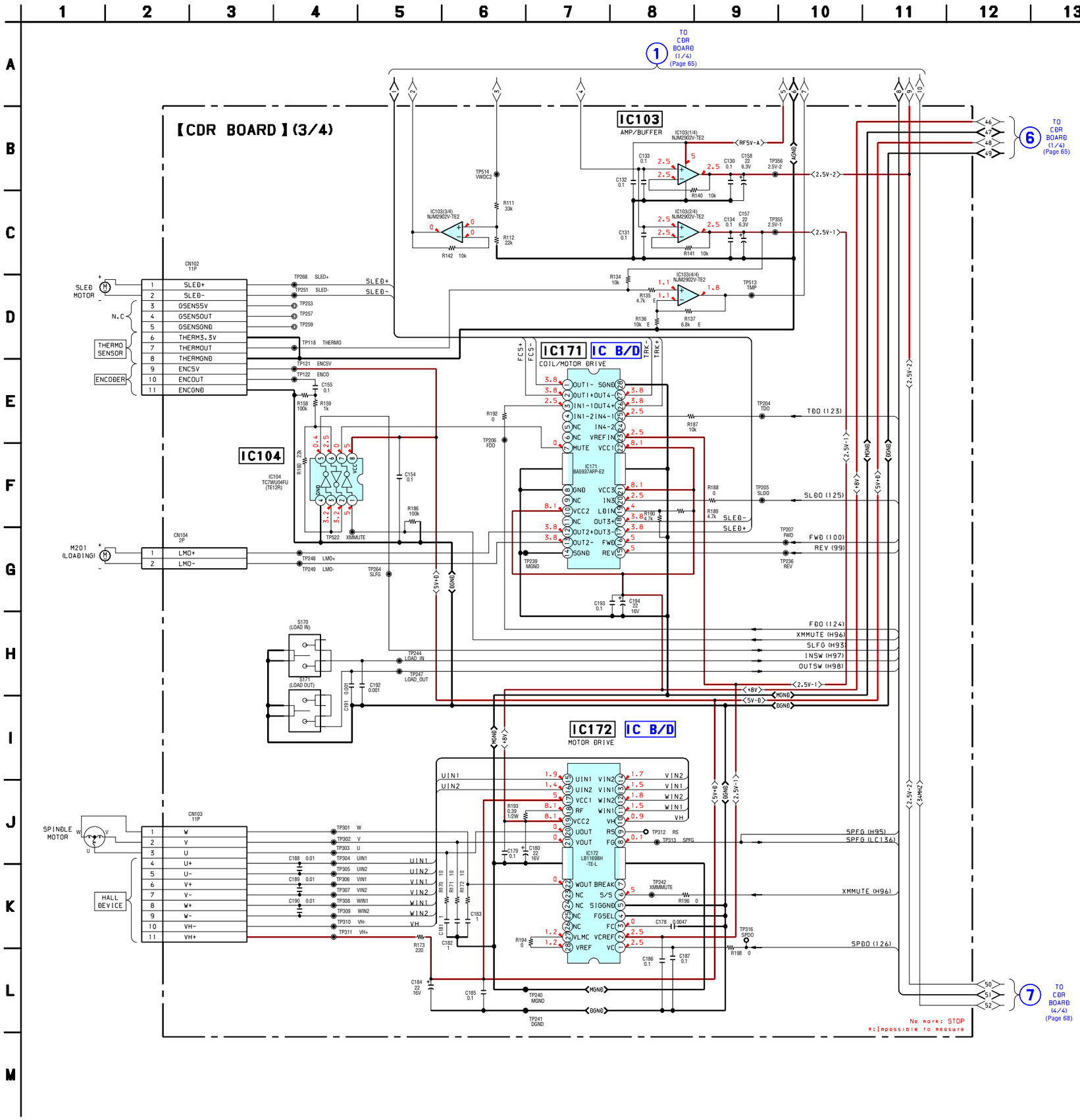


6-9. Schematic Diagrams – CD-R Section (2/4) –

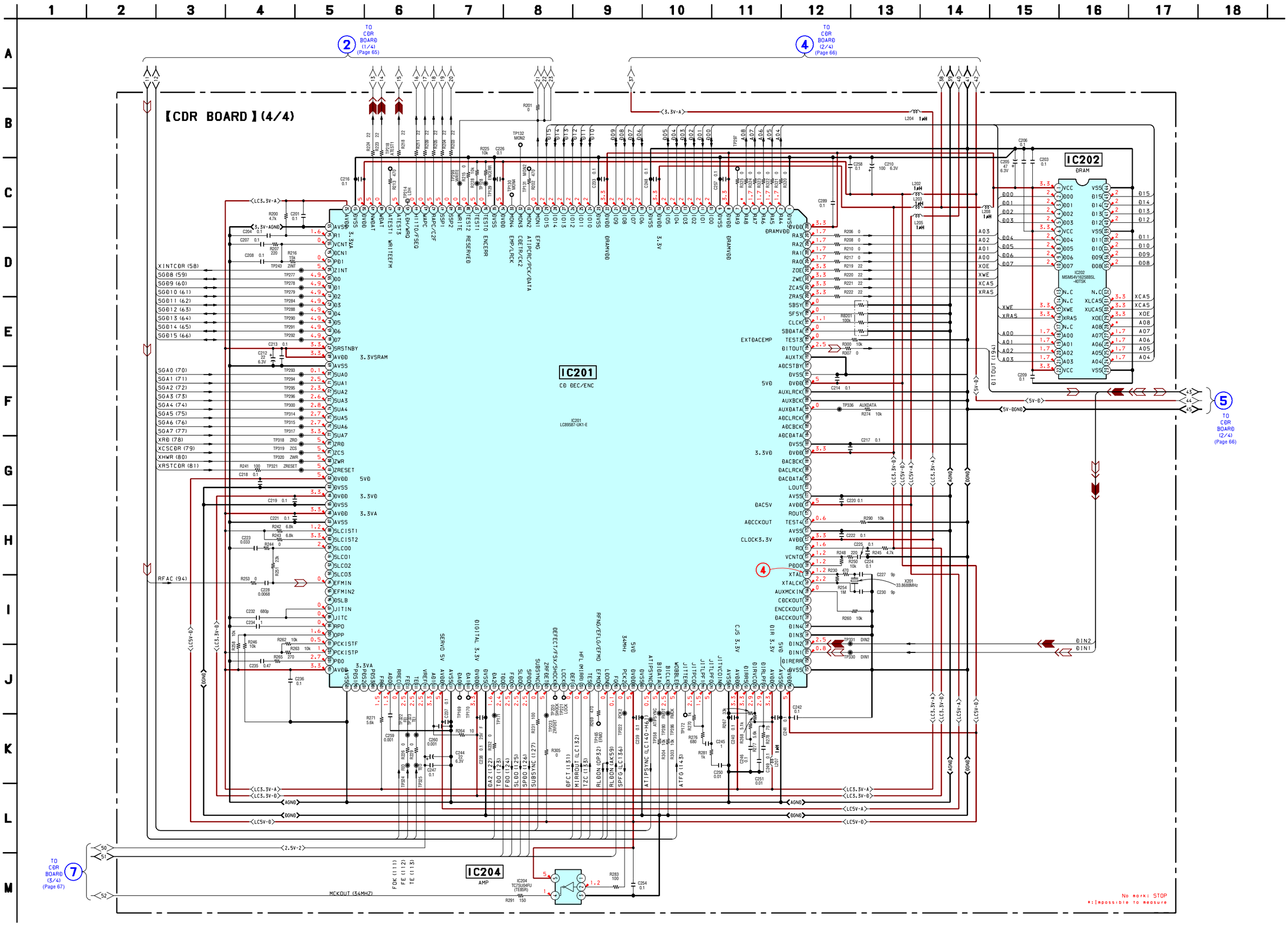
• See page 55 for Waveform. • See page 92 for IC Pin Function.



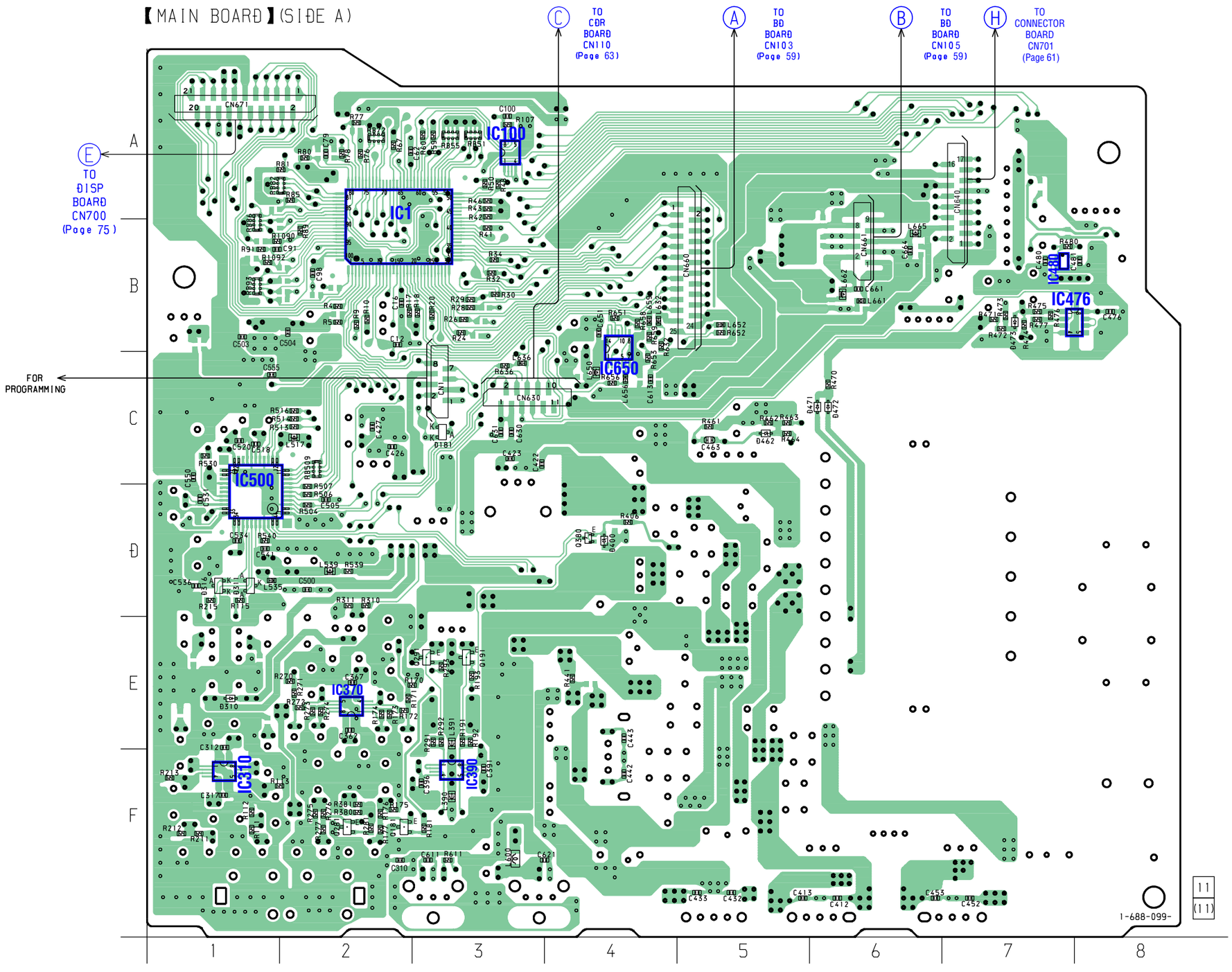
6-10. Schematic Diagrams – CD-R Section (3/4) – • See page 80 and 81 for IC Block Diagrams.



6-11. Schematic Diagrams – CD-R Section (4/4) – • See page 55 for Waveform. • See page 88 for IC Pin Function.



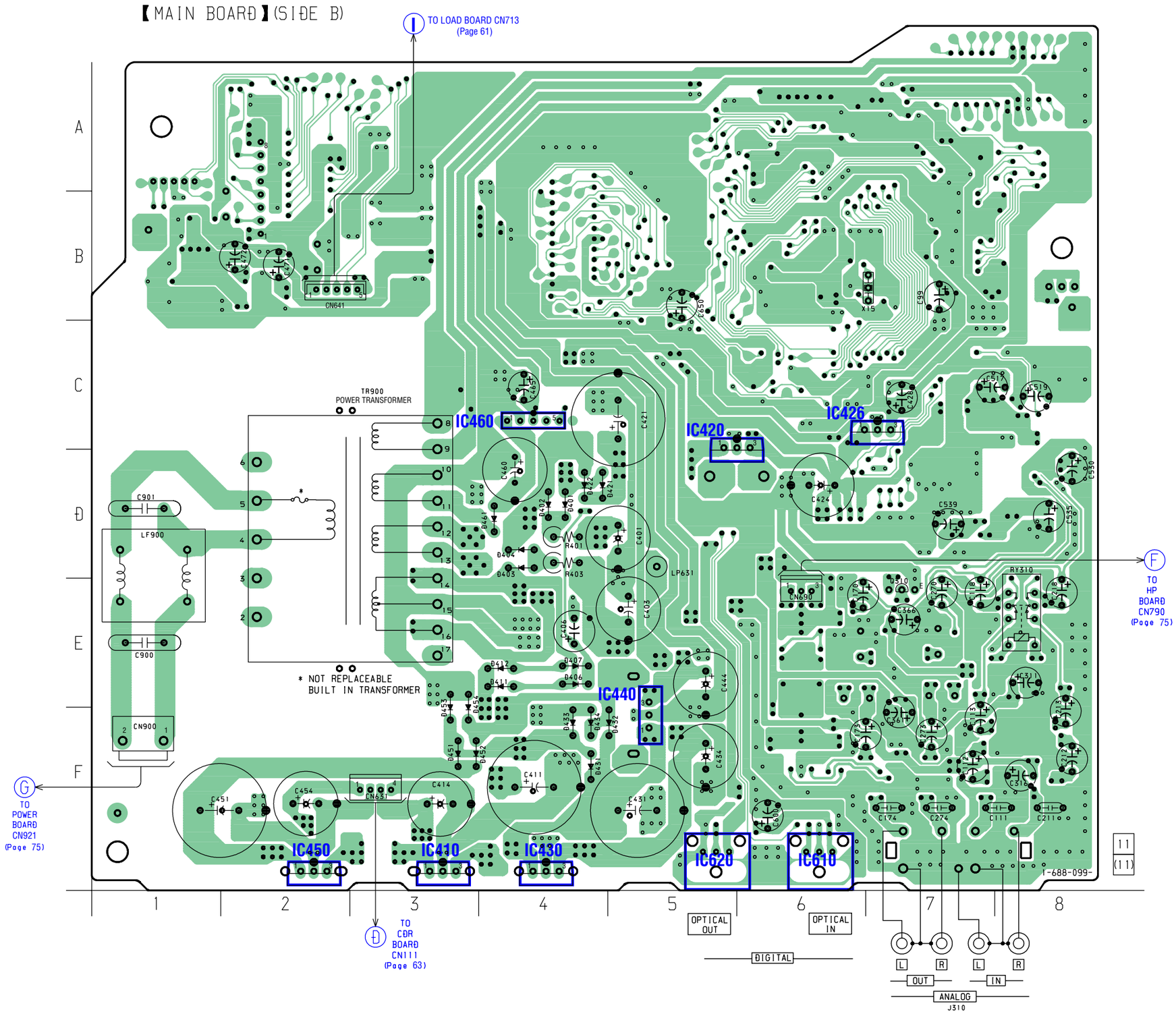
6-12. Printed Wiring Boards – Main Section (Side A) – • See page 55 for Circuit Boards Location. • : Uses unleaded solder.



• **Semiconductor Location**

Ref. No.	Location
D181	C-3
D310	E-1
D311	D-1
D316	D-1
D400	D-4
D462	C-5
D471	C-6
D472	C-6
D473	B-7
IC1	A-2
IC100	A-3
IC310	F-1
IC370	E-2
IC390	F-3
IC476	B-8
IC480	B-7
IC500	C-1
IC650	C-4
Q181	F-2
Q191	E-3
Q281	F-2
Q291	E-3
Q380	D-4

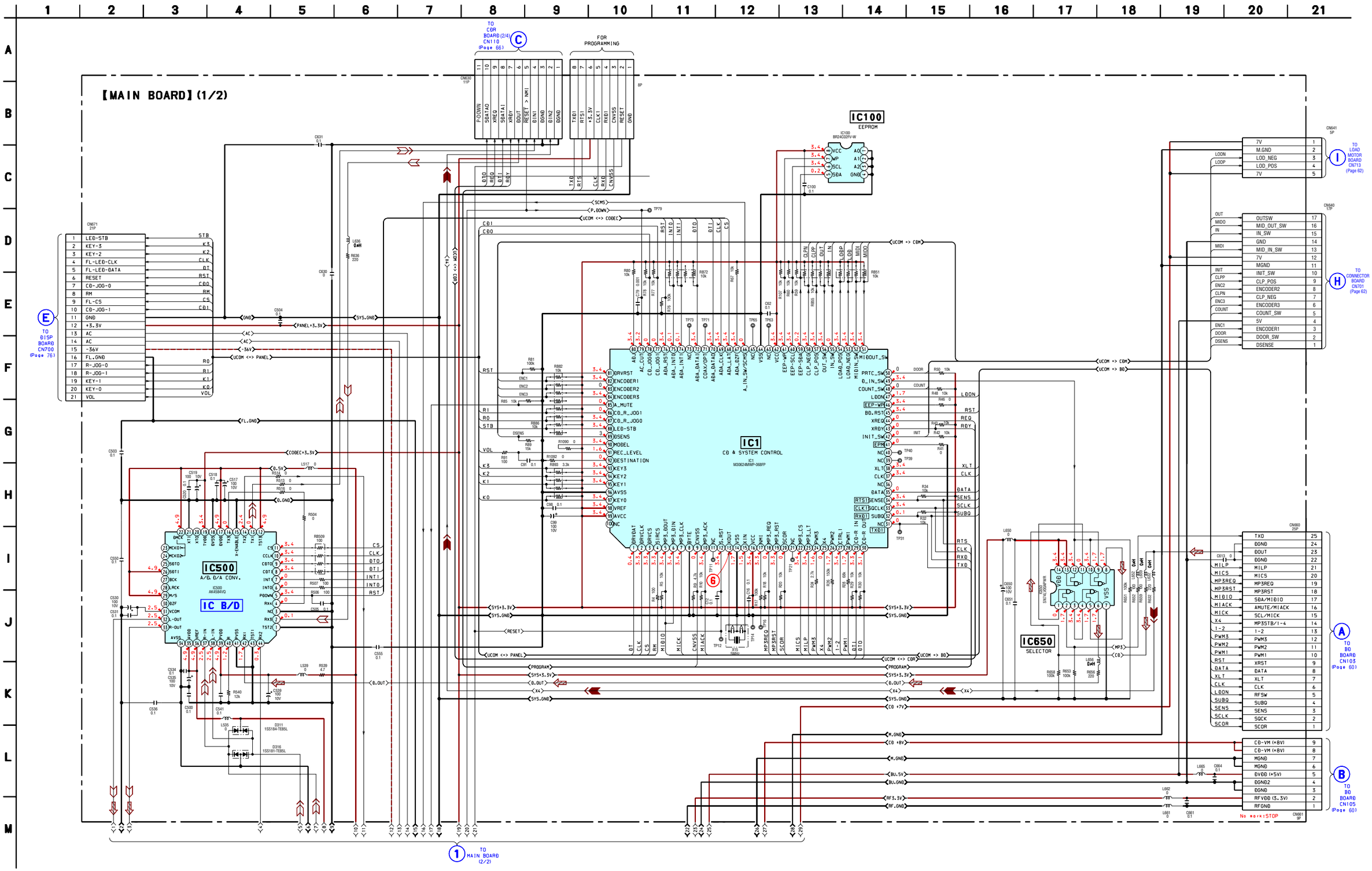
6-13. Printed Wiring Boards – Main Section (Side B) – • See page 55 for Circuit Boards Location. • : Uses unleaded solder.



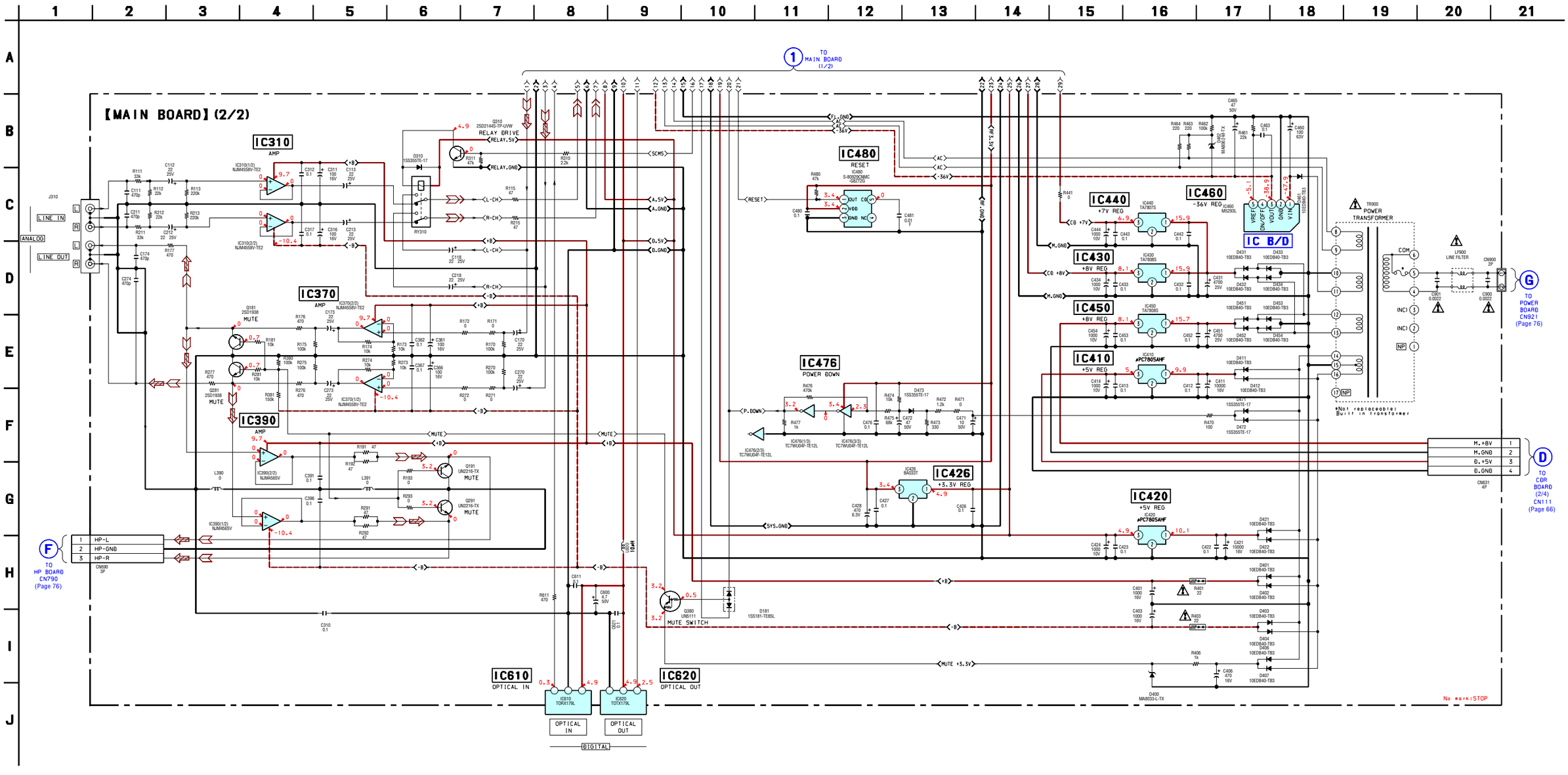
• **Semiconductor Location**

Ref. No.	Location
D401	D-4
D402	D-4
D403	D-4
D404	D-4
D406	E-4
D407	E-4
D411	E-4
D412	E-4
D421	D-5
D422	D-4
D431	F-4
D432	F-5
D433	F-4
D434	F-4
D451	F-3
D452	F-4
D453	E-3
D454	E-3
D461	D-4
IC410	F-3
IC420	C-5
IC426	C-6
IC430	F-4
IC440	E-5
IC450	F-2
IC460	C-4
IC610	F-6
IC620	F-5
Q310	D-7

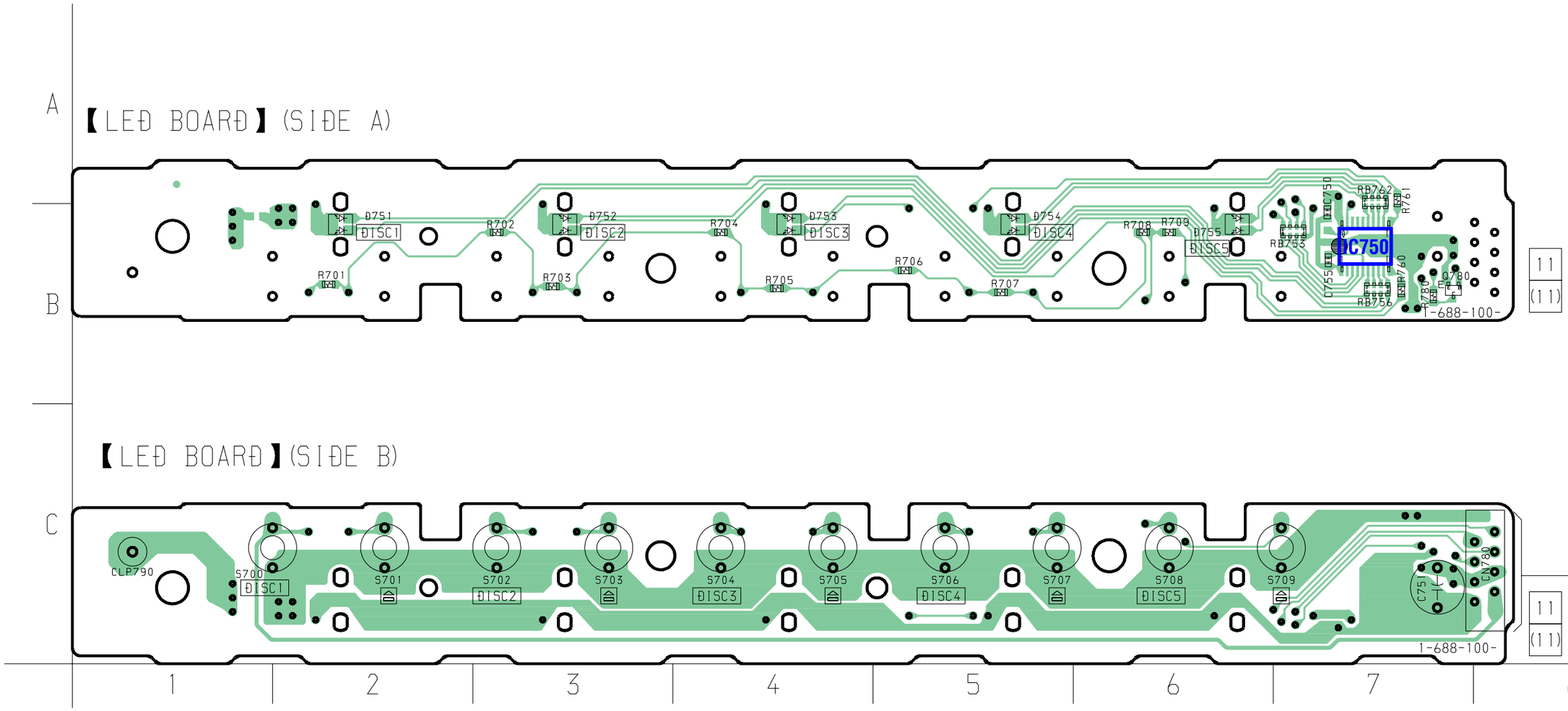
6-14. Schematic Diagrams – Main Section (1/2) – • See page 55 for Waveform. • See page 82 for IC Block Diagrams. • See page 84 for IC Pin Function.



6-15. Schematic Diagrams – Main Section (2/2) – • See page 81 for IC Block Diagrams.



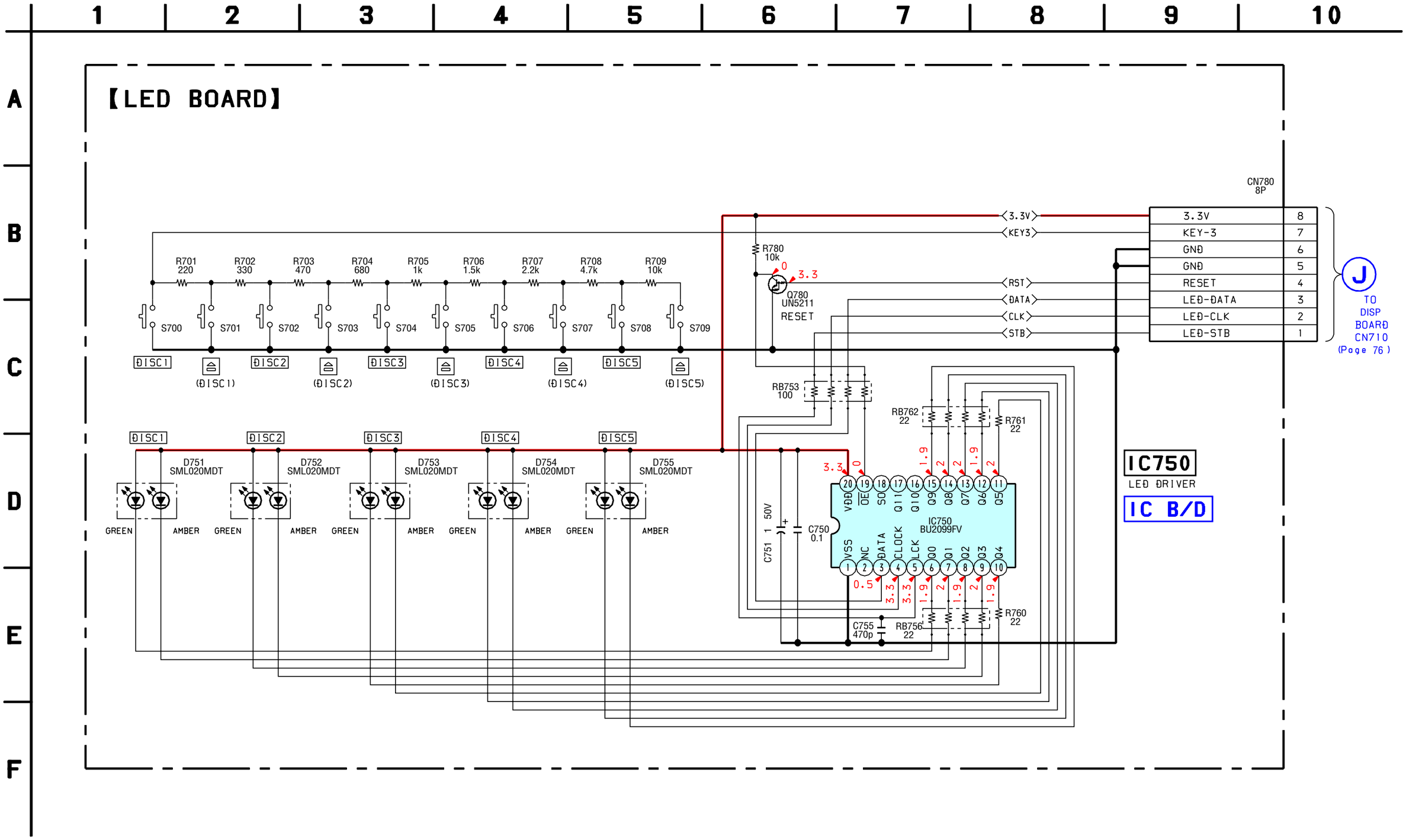
6-16. Printed Wiring Boards – Led Section – • See page 55 for Circuit Boards Location. • : Uses unleaded solder.



- **Semiconductor Location**

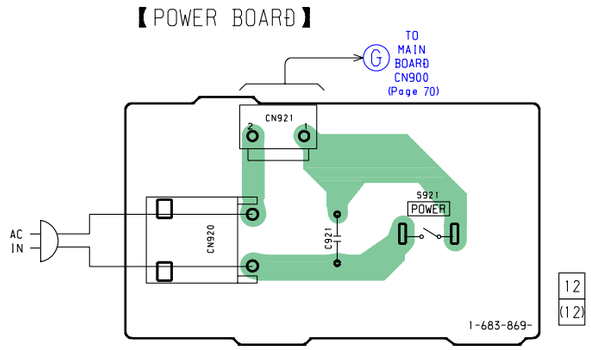
Ref. No.	Location
D751	B-2
D752	B-3
D753	B-4
D754	B-5
D755	B-6
IC750	B-7
Q780	B-7

6-17. Schematic Diagrams – LED Section – • See page 82 for IC Block Diagrams.

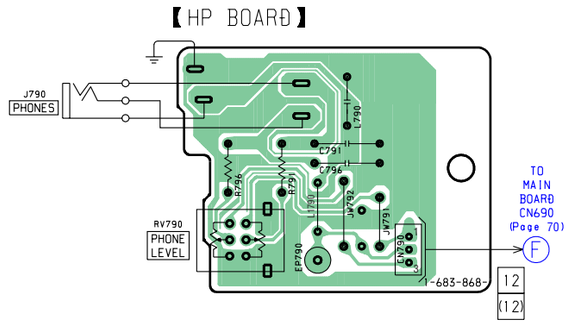


6-18. Printed Wiring Boards – Display Section – • See page 55 for Circuit Boards Location. • : Uses unleaded solder.

【POWER BOARD】

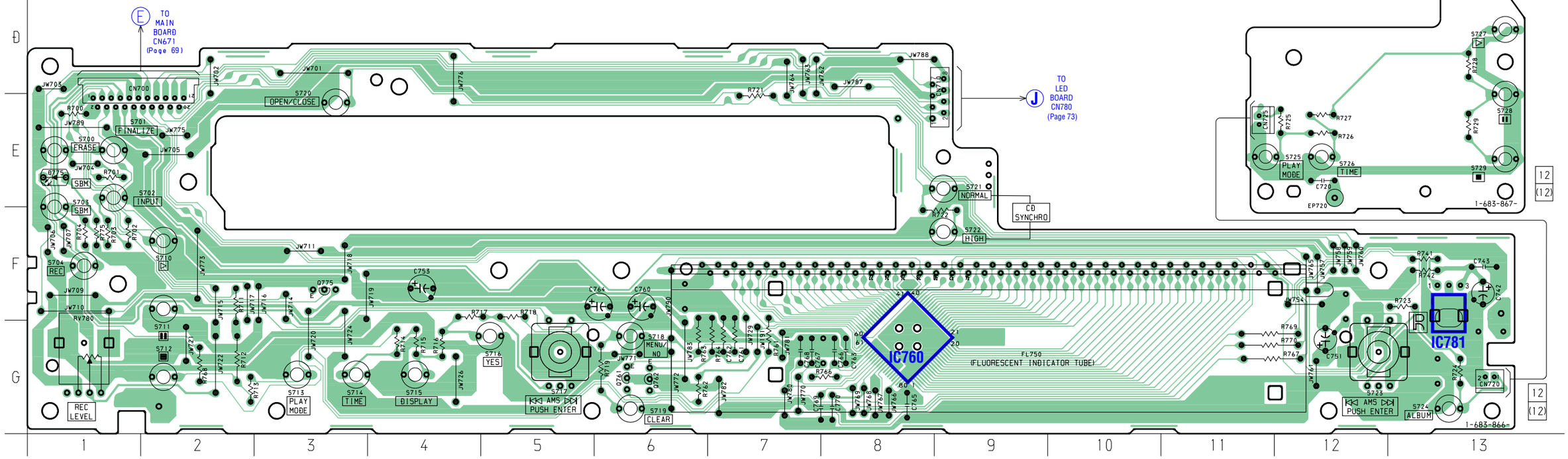


【HP BOARD】

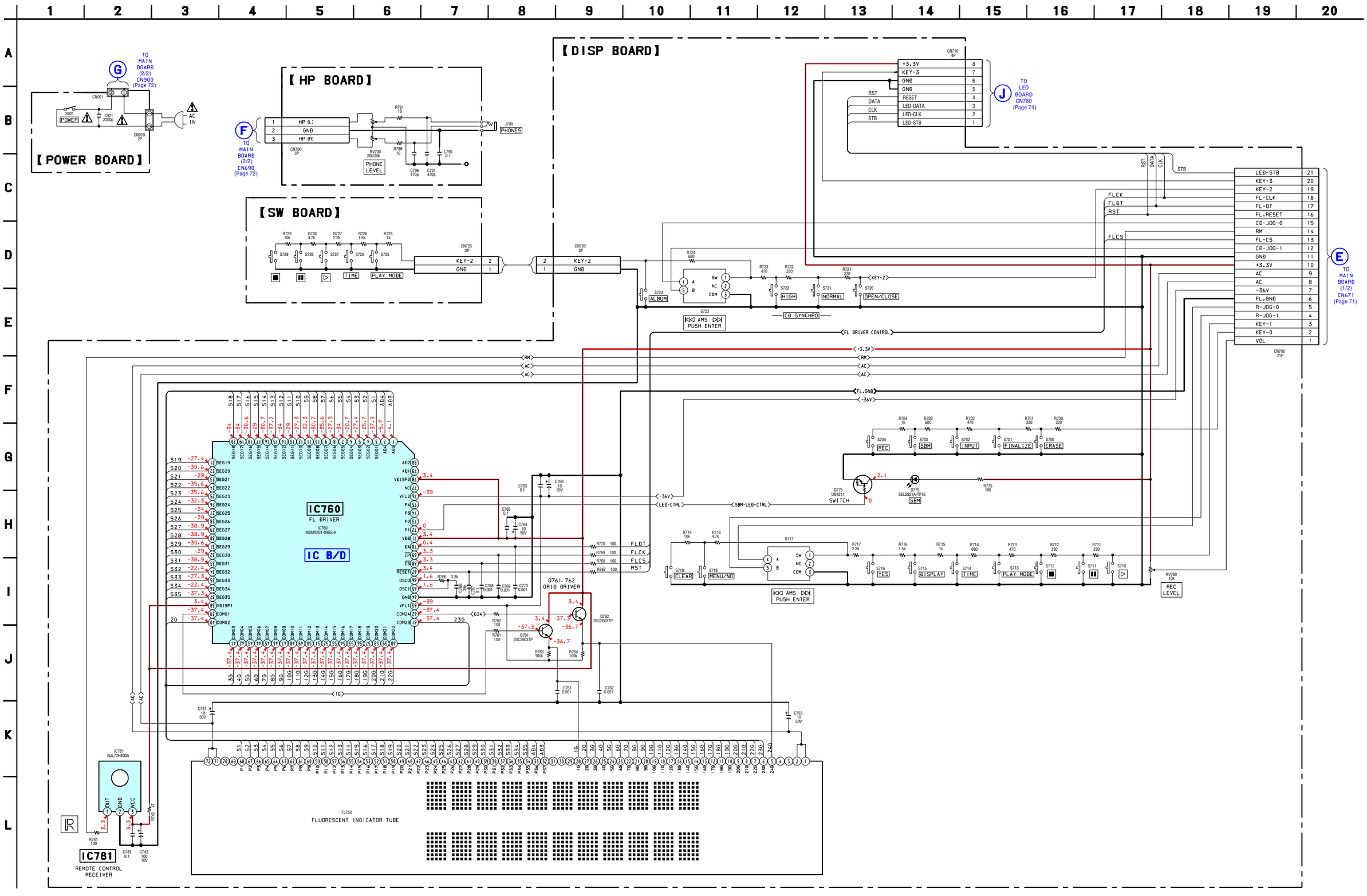


【DISP BOARD】

【SW BOARD】

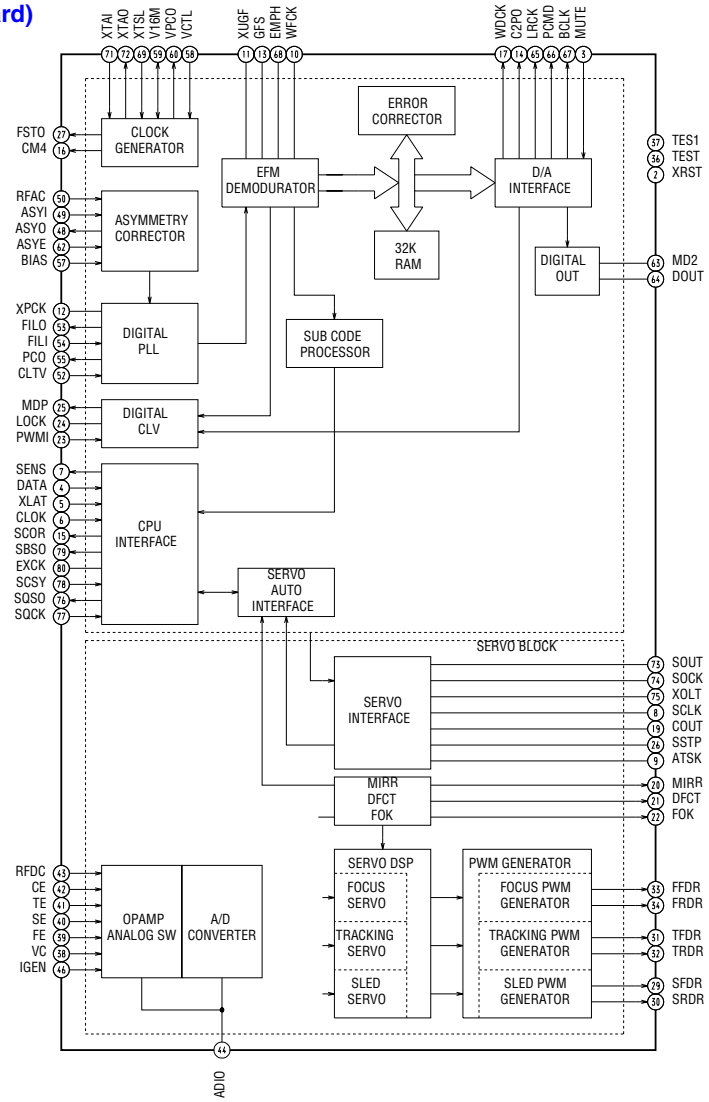


6-19. Schematic Diagrams – Display Section – • See page 83 for IC Block Diagrams.

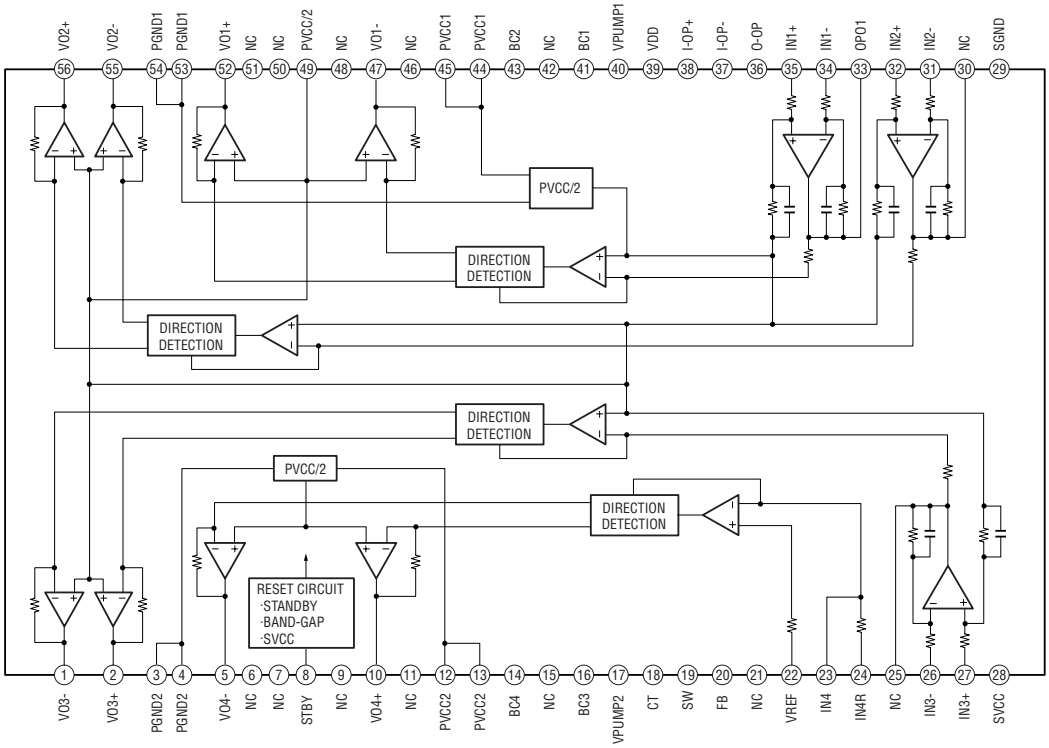


6-20. IC Block Diagrams

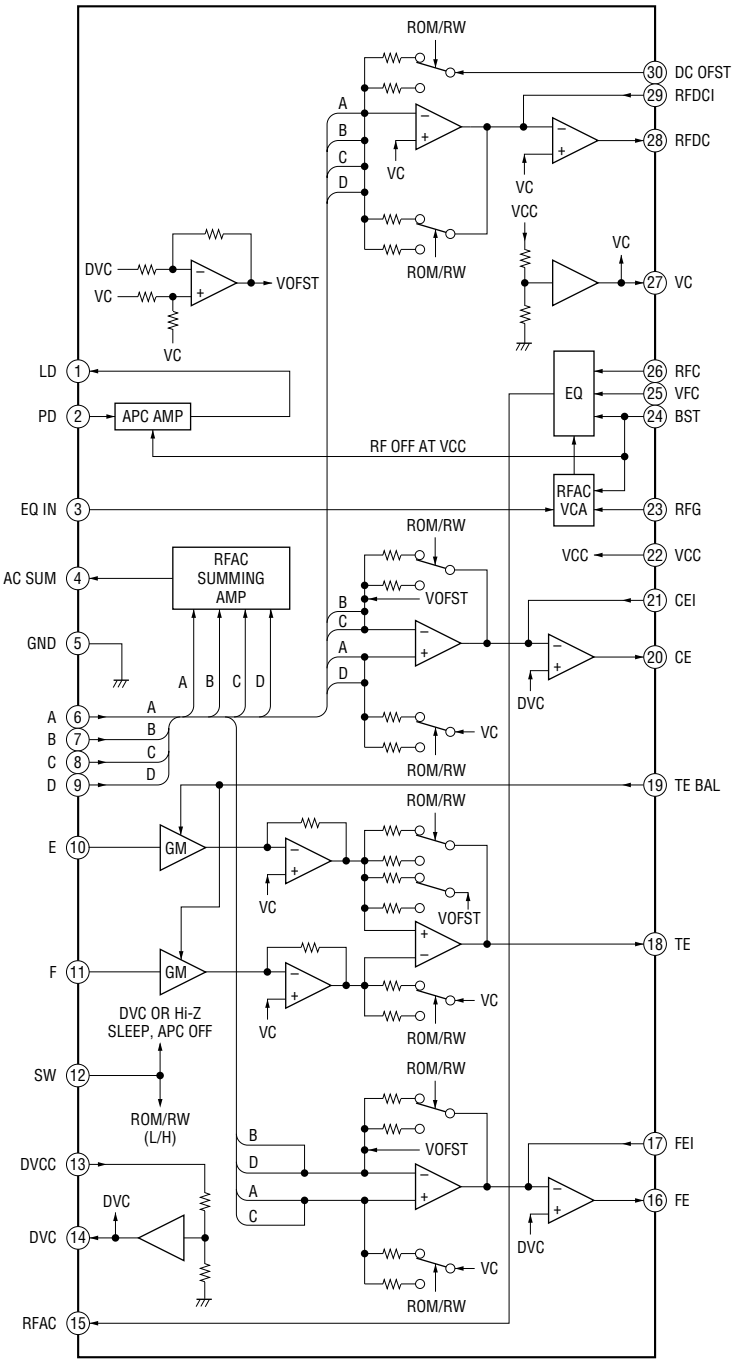
IC101 CXD3068Q (BD Board)



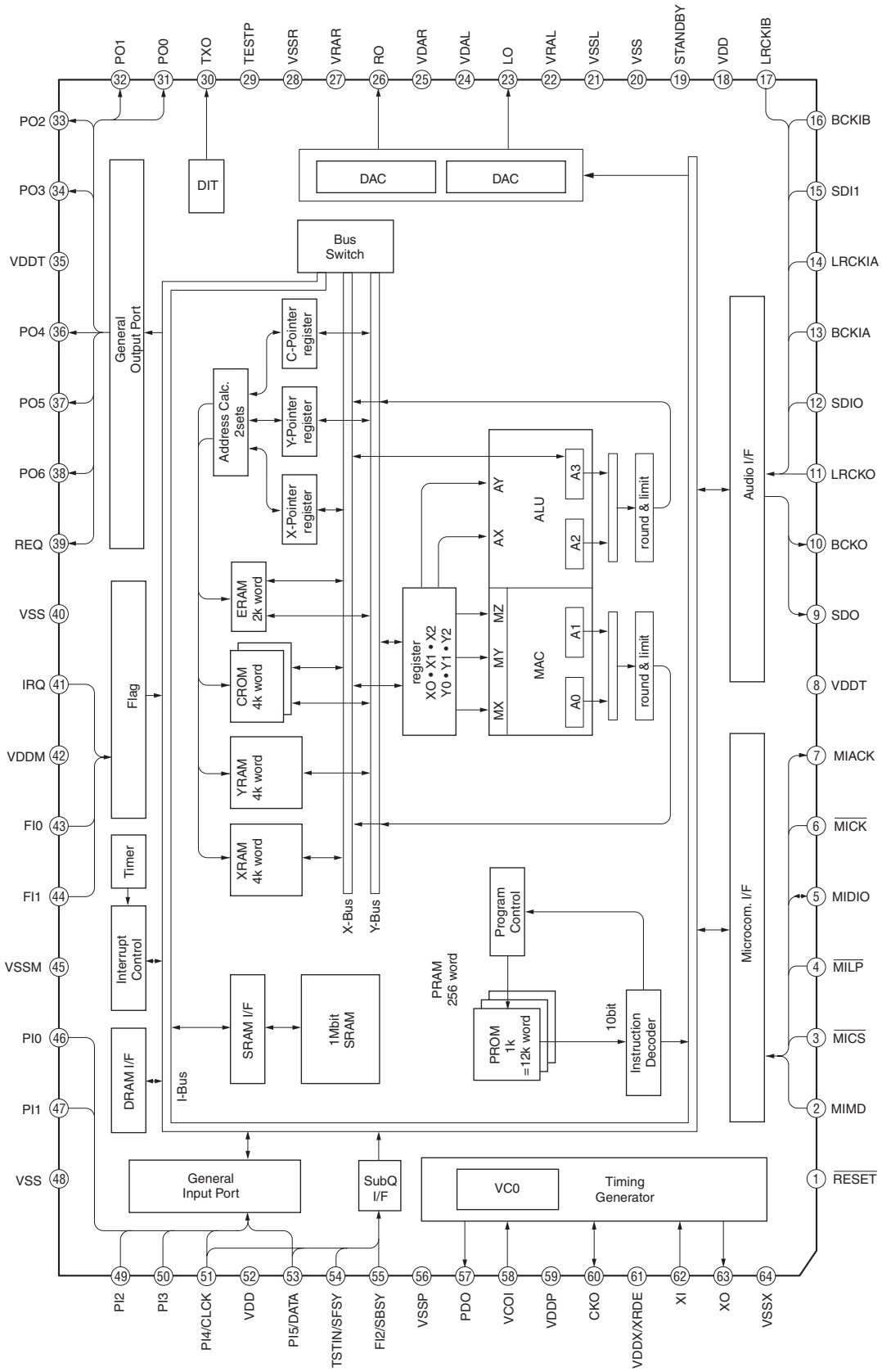
IC102 AN41050 (BD Board)



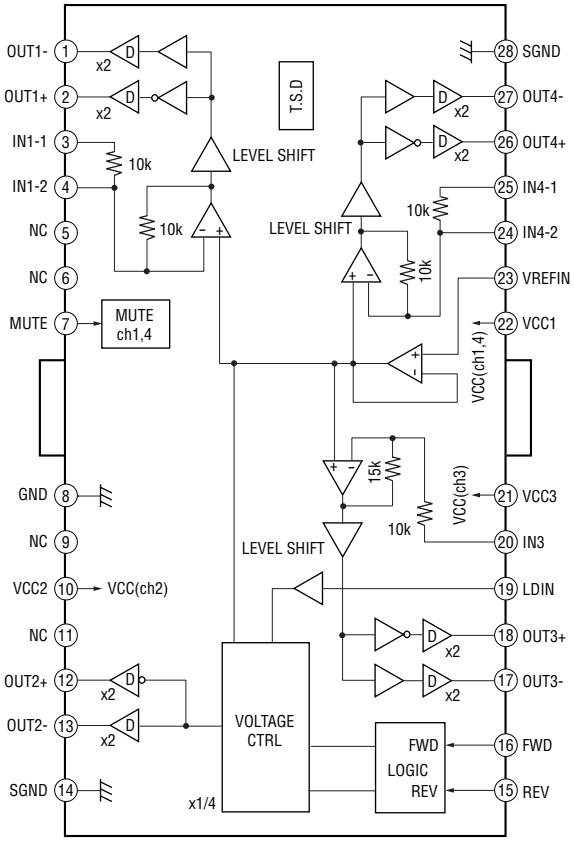
IC103 CXA2647N-T4 (BD Board)



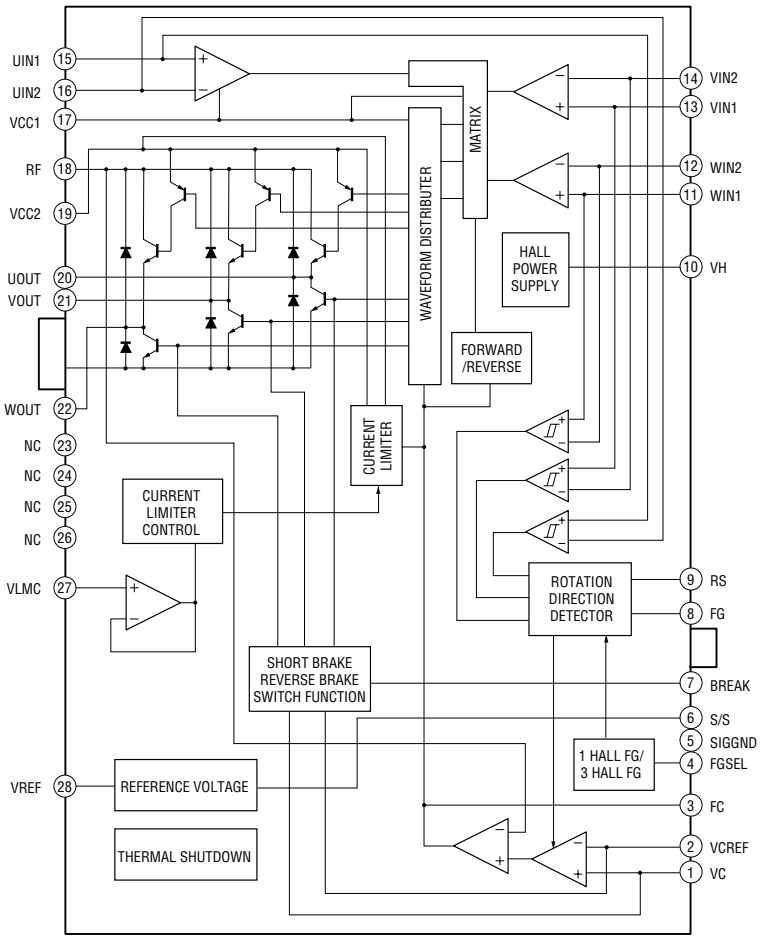
IC104 CXD9717R-008 (BD Board)



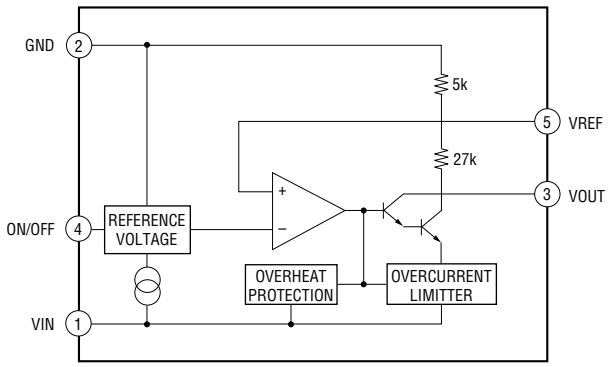
IC171 BA5937AFP-E2 (CDR Board)



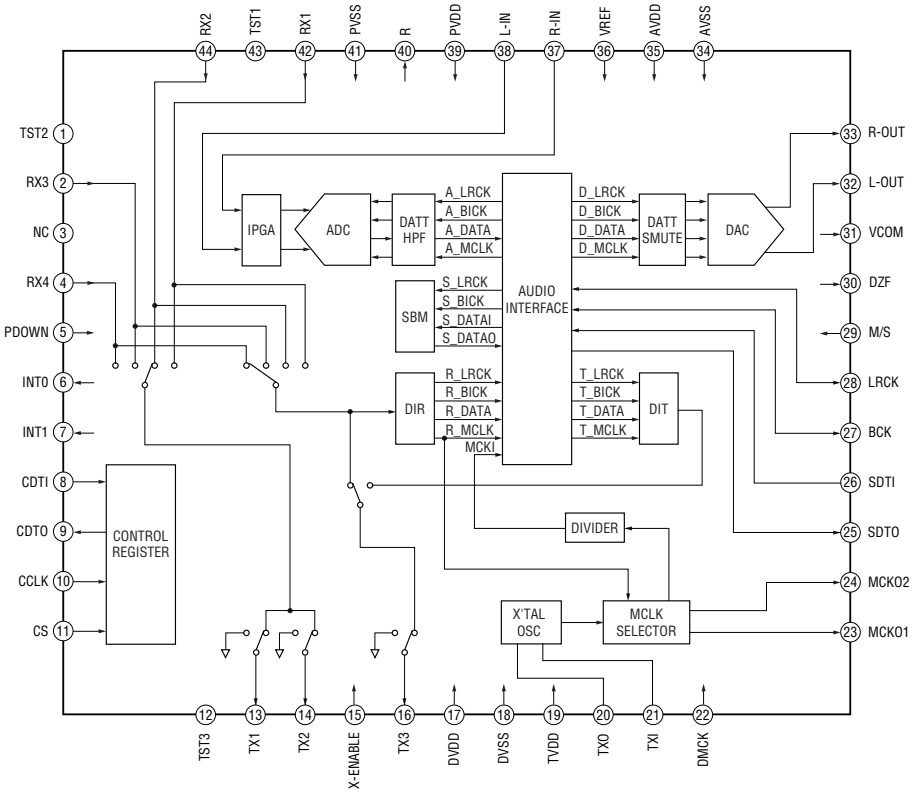
IC172 LB11698H-TE-L (CDR Board)



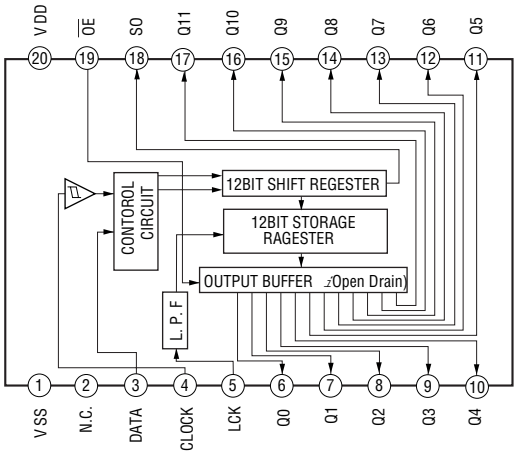
IC460 M5293L (MAIN Board)



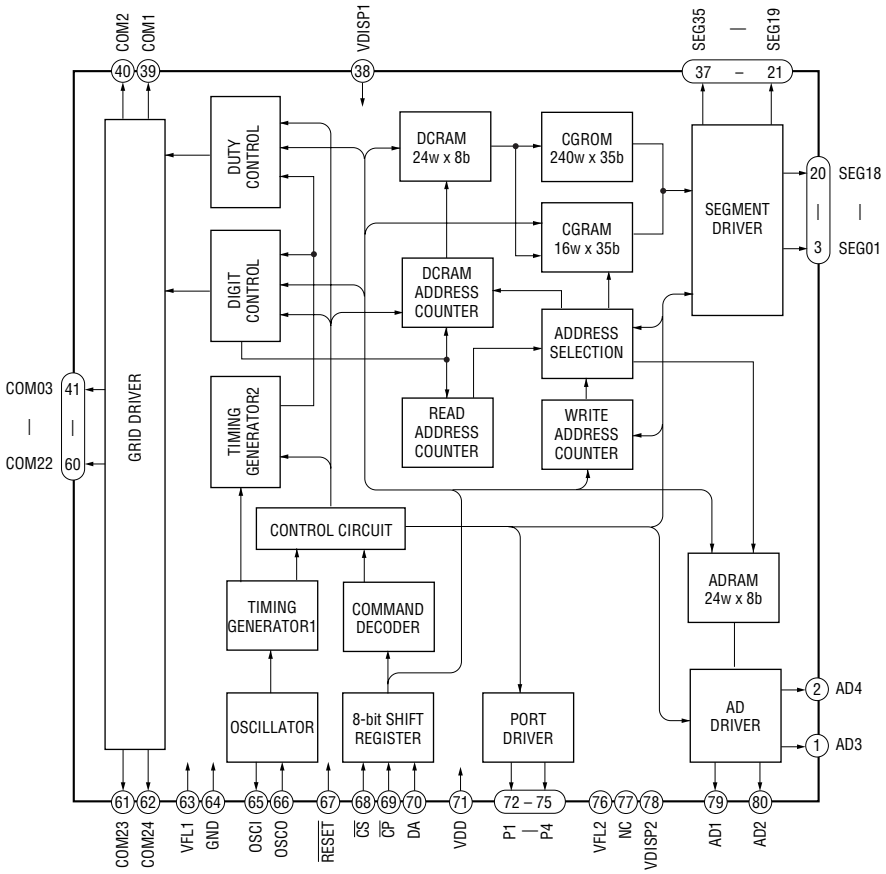
IC500 AK4584VQ (MAIN Board)



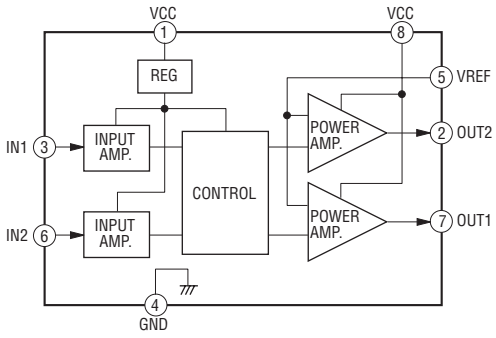
IC750 BU2099FV (LED Board)



IC760 MSM9201-04GS-K (DISP Board)



IC701 M54641L (CLAMP MOTOR Board)
IC702 M54641L (LOAD MOTOR Board)



6-21. IC Pin Function Description

• IC1 M30624MWP-068FP CD & SYSTEM CONTROL (MAIN Board)

Pin No.	Pin Name	I/O	Description
1	DRVDAT	O	Data output to the FL driver (IC760) and the LED driver (IC750)
2	DRVCLK	O	Clock output to the FL driver (IC760) and the LED driver (IC750)
3	DRVCS	O	Chip select signal output to the FL driver (IC760)
4	SIRCS	I	Remote control signal input from the remote control receiver (IC781)
5	MP3_DOUT	O	Serial data output to the MP3 decoder (IC104)
6	MP3_DIN	I	Serial data input from the MP3 decoder (IC104)
7	MP3_CLK	O	Serial clock output to the MP3 decoder (IC104)
8	BYTE	I	External data bus width setting terminal (“L” : single chip)
9	CNVSS	I	Processor mode setting terminal (“L” : single chip)
10	MP3_ACK	I	Acknowledge signal input from the MP3 decoder (IC104)
11	NC	O	Not used (open)
12	S.RST	I	System reset signal input
13	XOUT	O	Resonator terminal for main clock (5MHz)
14	VSS	—	Ground terminal
15	XIN	I	Resonator terminal for main clock (5MHz)
16	VCC	—	Power supply terminal
17	NMI	I	Non maskable interrupt signal input terminal (pull-up)
18	MP3_REQ	I	Request signal input from the MP3 decoder (IC104)
19	MP3_RESET	O	Reset signal output to the MP3 decoder (IC104)
20	SCOR	I	Sub-code sync (S0+S1) detection signal input from the DSP (IC101)
21	NC	O	Not used (open)
22	MP3_CS	O	Chip select signal output to the MP3 decoder (IC104)
23	MP3_LT	O	Latch signal output to the MP3 decoder (IC104)
24	PWM3	O	PWM signal output for RFDC
25	X4	O	Disc rotation speed selection signal output
26	PWM2	O	PWM signal output for TE
27	CTRL1	O	Disc rotation speed selection signal output
28	PWM1	O	PWM signal output for FE
29	CD-R IN	I	Data input from the microcomputer (IC501)
30	CD-R OUT	O	Data output to the microcomputer (IC501)
31	NC	O	Not used (open)
32	SUBQ	I	Sub code Q serial data input
33	SQCLK	O	Sub code Q serial clock output
34	SENSE	I	SENSE signal input from the DSP (IC101)
35	DATA	O	Data output to the DSP (IC101)
36	NC	O	Not used (open)
37	CLK	O	Clock output to the DSP (IC101)
38	XLT	O	Latch signal output to the DSP (IC101)
39	NC	O	Not used (open)
40	NC	O	Not used (open)
41	EPM	I	Flash programming terminal (pull-down)
42	INIT_SW	I	INIT detection switch signal input
43	XRDY	I	Data ready signal input from the microcomputer (IC501)
44	XREQ	O	Data request signal output to the microcomputer (IC501)
45	BD_RESET	O	Reset signal output to the DSP (IC101) and the motor/coil driver (IC102) (“L” : reset)
46	EEP-WP	I	Flash programming terminal (pull-up)
47	LDON	O	Laser on signal output
48	COUNT_SW	I	COUNT detection switch signal input
49	DIGITAL_IN_SW	O	Digital input selection signal output to the selector (IC650)
50	PRTC_SW	I	DOOR detection switch signal input

Pin No.	Pin Name	I/O	Description
51	MIDOUT_SW	I	MIDOUT detection switch signal input
52	MIDIN_SW	I	MIDIN detection switch signal input
53	LOAD_NEG	O	Loading motor control signal output
54	LOAD_POS	O	Loading motor control signal output
55	IN_SW	I	Tray open/close detection signal input
56	OUT_SW	I	Tray open/close detection signal input
57	CLP_POS	O	Elevator up/down motor control signal output
58	CLP_NEG	O	Elevator up/down motor control signal output
59	EEP-SDA	O	IIC data input/output from/to the EEPROM (IC100)
60	EEP-SCL	O	IIC clock input/output from/to the EEPROM (IC100)
61	EEP-WP	O	Write protect signal output the EEPROM (IC100)
62	VCC	—	Power supply terminal
63	NC	O	Not used (open)
64	VSS	—	Ground terminal
65	NC	O	Not used (open)
66	A_IN_SW/SCMS	O	Analog line selection signal output (SCMS on at SYNC mode)
67	ADA_DZF	I	Not used (pull-up)
68	ADA_LAT	O	Data latch signal output to the AD/DA converter (IC500)
69	ADA_CLK	O	Clock output to the AD/DA converter (IC500)
70	ADA_DATAO	O	Data output to the AD/DA converter (IC500)
71	COAX/OPT	O	Not used (open)
72	ADA_DATAI	I	Data input from the AD/DA converter (IC500)
73	NC	O	Not used (open)
74	ADA_INT1	I	Interrupt signal input from the AD/DA converter (IC500)
75	ADA_INT0	I	Interrupt signal input from the AD/DA converter (IC500)
76	ADA_RST	O	Reset signal output to the AD/DA converter (IC500)
77	CD_JOG1	I	CD jog signal input
78	CD_JOG0	I	CD jog signal input
79	AC_CUT	I	AC cut signal input (“L” : AC cut)
80	ADJ	I	ADJ mode setting terminal (“L” : ADJ mode)
81	DRVRST	O	Reset signal output to the FL driver (IC760) and the LED driver (IC750)
82	ENCODER1	I	Disc tray address detection signal input from the rotary encoder
83	ENCODER2	I	Disc tray address detection signal input from the rotary encoder
84	ENCODER3	I	Disc tray address detection signal input from the rotary encoder
85	A_MUTE	O	Muting control signal output (“L” : muting on)
86	CD_R_JOG1	I	CD-R jog signal input
87	CD_R_JOG0	I	CD-R jog signal input
88	LED-STB	O	Strobe signal output to the LED driver (IC750)
89	DSENS	I	Disc in detection sensor signal input
90	MODEL	I	Model setting terminal
91	REC_LEVEL	I	Analog recording level signal input from the RV780
92	DESTINATION	I	Destination setting terminal
93	KEY3	I	Key data AD input
94	KEY2	I	Key data AD input
95	KEY1	I	Key data AD input
96	AVSS	—	Ground terminal (analog)
97	KEY0	I	Key data AD input
98	VREF	—	Analog reference voltage input terminal
99	AVCC	—	Power supply terminal (analog)
100	NC	O	Not used (open)

• IC101 AK8567 RF AMP (CDR Board)

Pin No.	Pin Name	I/O	Description
1	AVDD3	—	Power supply (analog)
2	BCENT	O	Center signal output
3	PHBETA	O	β signal top level signal output
4	BHBETA	O	β signal bottom level signal output
5	PHBTC	O	Extrenal capacitor teminal for PHBETA droop rate setting
6	BHBTC	O	Extrenal capacitor teminal for BHBETA droop rate setting
7	MPP	O	Main push-pull signal output Not used (open)
8	TEIN	I	Tracking signal processing input
9	TE	O	Tracking error signal output
10	FE	O	Focus error signal output
11	SBAD	O	SBAD signal output Not used (open)
12	TZCLVL	I	Tracking zero cross comparate level input
13	VREF	I/O	Decoupling teminal for internal reference voltage / internal reference voltage input terminal
14	AGND1	O	Decoupling teminal for internal reference voltage
15	BIAS	O	Bias resistor connection terminal BIAS = 4.7kΩ
16	VSS	—	Ground terminal (analog)
17	FVREF	I	APC reference voltage input terminal
18	FPDO	I	Laser monitor voltage input
19	RREF	I/O	Power setting voltage input for read APC / internal DAC setting voltage output
20	VRDC	O	Read laser driver control signal output
21	VRDCN	I	Read laser driver control amplifier (-) teminal
22	VRDCN2	I	Read laser driver time constant setting terminal
23	WREF	I/O	Power setting voltage input for write APC / internal DAC setting voltage output
24	WDAO	O	Power setting internal DAC voltage output for write APC Not used (open)
25	AVDD2	—	Power supply (analog)
26	AVSS2	—	Ground terminal (analog)
27	VWDC	O	Write laser driver control signal output
28	VWDCN2	I	Write laser driver time constant setting terminal
29	VWDCN	I	Write laser driver control amplifier (-) teminal
30	ATFM	O	Wobble signal output Not used (open)
31	AGC1C	O	External capacitor terminal for AGC response speed setting
32	AGC2C	O	External capacitor terminal for AGC response speed setting
33	AGC3C	O	External capacitor terminal for AGC response speed setting
34	AGND2	O	Decoupling teminal for internal reference voltage
35	VSS	—	Ground terminal (analog)
36	SGAINDN	I	Gain selection signal input
37	GAINUP	I	CD-RW selection control signal input
38	AGCON	I	Wobble AGC enable signal input “H” : AGC ON, “L” : AGC reset
39	ATFG	O	ATIP FG signal output (Wobble signal after formation of 2 values)
40	XTOR	O	Tracking amplitude detection signal output Not used (open)
41	XTAND	O	Tracking failure detection signal output
42	TZC	O	Tracking zero cross detection signal output
43	RECD2	O	Recorded block detection signal output 2 “H” : recorded block, “L” : unrecorded block
44	RECD1	O	Recorded block detection signal output 1 “H” : recorded block, “L” : unrecorded block
45	RC	O	RC signal output
46	DFCT	O	DFCT signal output
47	MIRR	O	MIRR signal output
48	MCLK1	I	Main clock input 1 (sine wave input) 34.5744MHz
49	MCLK2	I	Main clock input 2 (sine wave input) fixed at “L”
50	DVSS	—	Ground terminal (digital)

Pin No.	Pin Name	I/O	Description
51	DVDD	—	Power supply (digital)
52	FOK	O	FOK signal output
53	RZC	O	RF zero cross detection signal output Not used (open)
54	MPDSH	I	Sampling pulse input for main beam signal "H" : sample, "L" : hold
55	SPDSH	I	Sampling pulse input for side beam signal "H" : sample, "L" : hold
56	RFPDSH	I	Sampling pulse input for read APC "H" : sample, "L" : hold
57	WFPDSH	I	Sampling pulse input for write APC "H" : sample, "L" : hold
58	WLDON	I	Write LD control signal input "H" : set write APC value to zero, "L" :LD ON
59	RLDON	I	Read LD control signal input "H" : set read APC value to zero, "L" :LD ON
60	SPBLVL	I	BLEVEL sampling pulse input "H" : sample, "L" : hold
61	SPRFTR	I	WRFTR sampling pulse input "H" : sample, "L" : hold
62	VWDSW	I	Write laser driver time constant setting switch control signal input "H" : ON, "L" : OFF
63	VRDSW	I	Read laser driver time constant setting switch control signal input "H" : ON, "L" : OFF
64	RSBETA	I	β measuring circuit reset signal input "H" : reset the outputs of PHBETA and BHBETA
65	SCLK	I	Clock input for register setting
66	SDATA	I	Serial data input for register setting
67	XLAT	I	Latch siganl input for register setting
68	XRST	I	Register reset terminal "L" : reset
69	VSS	—	Ground terminal (analog)
70	OSTCC	O	Capacitor connection terminal for setting fc of the equalizer output offset canceller
71	AGCC	O	External capacitor connection terminal for setting the RFAGC response speed
72	PHD2C	O	External capacitor connection terminal for setting the P/H2 droop rate
73	RCCMPI	I	RC detection comparator input
74	PBHO	O	Bottom/top level output of RRF signal
75	AVDD1	—	Power supply (analog)
76	AVSS1	—	Ground terminal (analog)
77	RRFTOP	O	Peak level output of RRF signal Not used (open)
78	RRFBTM	O	Bottom level output of RRF signal Not used (open)
79	N.C.	—	Not used (ground)
80	EQRF	O	Equalizer filter output
81	N.C.	—	Not used (ground)
82	AUX1	I	Auxiliary input terminal (1) for monitoring signal Not used
83	AUX2	I	Auxiliary input terminal (2) for monitoring signal from the CN115 Not used
84	AUX3	I	Auxiliary input terminal (3) for monitoring VWDC2 signal from the optical pick-up
85	MPXOUT	O	Multiplexer signal output for the signal monitoring
86	RRFVC(1V)	I	Level shift voltage input terminal for RRF signal
87	RECDIN	I	RF signal input for the recorded block detection
88	RRF	O	Read RF signal output
89	WRF	O	Write RF signal output (open)
90	VSS	—	Ground terminal (analog)
91	AIN	I	Main beam signal (A) input
92	BIN	I	Main beam signal (B) input
93	CIN	I	Main beam signal (C) input
94	DIN	I	Main beam signal (D) input
95	EIN	I	Side beam signal (E) input
96	FIN	I	Side beam signal (F) input
97	GIN	I	Side beam signal (G) input
98	HIN	I	Side beam signal (H) input
99	HAVC	I	Main/side beam signal center voltage input
100	AVSS3	—	Ground terminal (analog)

• IC201 LC89587-UK1-E CD DEC/ENC (CDR Board)

Pin No.	Pin Name	I/O	Description
1	DVSS	—	Ground terminal (digital)
2 to 6	RA4 to RA8	O	Address signal output to the buffer RAM for audio data delay
7	RA9	O	Address signal output to the buffer RAM for audio data delay Not used (open)
8	DVDD	—	Power supply +3.3V (DRAM I/F)
9	DVSS	—	Ground terminal (digital)
10 to 15	IO0 to IO5	I/O	Data input/output to the buffer RAM for audio data delay
16	DVDD	—	Power supply +3.3V (digital)
17	DVSS	—	Ground terminal (digital)
18 to 21	IO6 to IO9	I/O	Data input/outputto the buffer RAM for audio data delay
22	DVDD	—	Power supply +3.3V (DRAM I/F)
23	DVSS	—	Ground terminal (digital)
24 to 29	IO10 to IO15	I/O	Data input/output to the buffer RAM for audio data delay
30	MON1	O	Monitor output EFMG signal
31	MON2	O	Monitor output ATIPCRC/PCK/DATA signal (open)
32	MON3	O	Monitor output CDETR/CK2 signal (open)
33	MON4	O	Monitor output EMP/LRCK signal (open)
34	DVDD	—	Power supply +5V (digital)
35	DVSS	—	Ground terminal (digital)
36	TEST0	I/O	ENCERR signal output (pull-up)
37	TEST1	I/O	TESTOUT signal output (pull-up)
38	TEST2	I/O	TESTIN signal input (ground)
39	WRITE	I	Write strategy signal control terminal
40	SSP2	O	Servo sampling pulse output
41	SSP1	O	Servo sampling pulse output
42	RAPC/C2F	O	Laser sampling pulse output
43	WAPC	O	Laser sampling pulse output
44	H11TO/FSEQ	O	Running OPC sampling pulse output
45	LDH/WRQ	O	LD control signal output for recording Not used (open)
46	ATEST3	O	Analog block test signal output (WE2)
47	ATEST1	O	Analog block test signal output Not used (open)
48	WDAT	O	LD control signal output for recording
49	NWDAT	O	LD control signal output for recording
50	DVDD	—	Power supply +5V (digital)
51	DVSS	—	Ground terminal (digital)
52	AVDD	—	Power supply 3.3V (analog) for the write strategy
53	AVSS	—	Ground terminal (analog)
54	R1	I	Analog terminal for the write strategy (fixed at “H”)
55	VCNT1	I	Analog terminal for the write strategy
56	DCN1	I	Analog terminal for the write strategy Not used (open)
57	PD1	O	Analog terminal for the write strategy
58	ZINT	O	Interrupt request signal output to the µcom (IC501)
59 to 66	D0 to D7	I/O	Data input/output with the µcom (IC501)
67	SRSTNBY	I	Back up control terminal for CD-TEXT SRAM
68	AVDD	—	Power supply +3.3V (analog) for CD-TEXT SRAM
69	AVSS	—	Ground terminal (analog)
70 to 77	SUA0 to SUA7	I	Command register selection address signal input
78	ZRD	I	Data read out signal input from the µcom (IC501)
79	ZCS	I	Chip select signal input from the µcom (IC501)
80	ZWR	I	Data write signal input from the µcom (IC501)
81	ZRESET	I	Reset signal input

Pin No.	Pin Name	I/O	Description
82	DVDD	—	Power supply +5V (digital)
83	DVSS	—	Ground terminal (digital)
84	DVDD	—	Power supply +3.3V (digital)
85	DVSS	—	Ground terminal (digital)
86	AVDD	—	Power supply +3.3V (analog) for slice level setting
87	AVSS	—	Ground terminal (analog)
88, 89	SLCIST1, SLCIST2	I	EFM slice level setting signal input
90 to 93	SLCO0 to SLCO3	O	EFM slice level output
94	EFMIN	I	EFM signal input
95	EFMIN2	I	EFM signal input Not used (open)
96	DSLB	O	PWM signal output for SLC Not used (open)
97	JITIN	I	Jitter judgement input
98	JITC	O	Jitter output
99	RPO	O	P/N balance adjustment terminal
100	OPP	I	P/N balance adjustment terminal
101	PCKISTF	I	Charge pump terminal for the frequency comparison
102	PCKISTP	I	Charge pump terminal for the phase comparison
103	PD0	O	Filter for the charge pump
104	AVDD	—	Power supply +3.3V (analog) for the charge pump
105	AVSS	—	Ground terminal (analog)
106 to 108	PDS1 to PDS3	O	Charge pump selection terminal Not used (open)
109	FR	I	VCO frequency setting input teminal
110	AD0	I	AD input
111	RREC	I	FOK signal input for optical judgement
112	FE	I	Focus error signal input
113	TE	I	Tracking error signal input
114	VREF	I	Servo system reference voltage input
115	AD1	I	AD input
116	AVDD	—	Power supply +5V (analog) for the servo block AD/DA
117	AVSS	—	Ground terminal (analog)
118, 119	DA0, DA1	O	DA output Not used (open)
120	DVDD	—	Power supply +3.3V (digital)
121	DVSS	—	Ground terminal (digital)
122	DA2	O	DA output
123	TDO	O	Tracking signal output
124	FDO	O	Focus signal output
125	SLDO	O	Sled signal output
126	SPDO	O	Spindle signal output
127	SUBSYNC	O	Sub-code sync signal output
128	ZRFDET	I	Judgement signal input for the existence of RF signal (fixed at “H”)
129	SHOCK	O	Shock detection signal output Not used (open)
130	LOCK	O	PLL lock status signal output Not used (open)
131	DEF	I	Defect detection signal input
132	HFL(MIRR)	I	MIRR detection signal input
133	TES	I	Tracking zero cross signal input
134	EFMO	O	EFM signal output after formation of 2 values (open)
135	LDON	O	Laser control signal output for play back
136	FG	I	Rotation monitor signal input from the spindle motor driver
137	PCK2	O	Bit clock output for EFM playback
138	DVDD	—	Power supply +5V (digital)

Pin No.	Pin Name	I/O	Description
139	DVSS	—	Ground terminal (digital)
140	ATIPSYNC	O	ATIP sync signal output
141	BIDATA	I/O	ATIP demodulator input/output (fixed at "L")
142	BICLK	I/O	ATIP demodulator input/output (fixed at "L")
143	WOBBLE	I	ATIP demodulator input/output
144	JITERR	O	Clock jitter suppressor error signal output Not used (open)
145	JITPCO	O	PLL phase frequency comparator output
146	JITLPFI	I	PLL low-pass filter input terminal
147	JITLPFO	O	PLL low-pass filter output terminal
148	JITVCOIN	I	PLL, VCO clock input terminal
149	AVSS	—	Ground terminal (analog)
150	AVDD	—	Power supply +3.3V (analog) for the clock jitter suppressor
151	DIRRS	I	VCO gain control signal input
152	DIRVCO	I	VCO free running oscillation frequency control signal input
153	DIRLPF	O	Loop filter setting terminal
154	AVDD	—	Power supply +3.3V (analog) for the DIR
155	AVSS	—	Ground terminal (analog)
156	DVDD	—	Power supply +5V (digital)
157	DVSS	—	Ground terminal (digital)
158	DIRERR	O	PLL lock data error output
159	DIN1	I	Digital data input from the IC500
160	DIN2	I	Digital data input from the IC101
161, 162	DIN3, DIN4	I	Digital data input Not used (ground)
163	DACCKOUT	O	DAC clock output Not used (open)
164	ENCCKOUT	O	RF processor clock output Not used (open)
165	CDCKOUT	O	CD decoder clock output Not used (open)
166	AUXMCKIN	I	External clock input (fixed at "L")
167	XTALCK	I	Crystal oscillation circuit input
168	XTAL	O	Crystal oscillation circuit output
169	PDO0	O	Charge pump output
170	VCNT0	I	VCO control voltage input
171	R0	I	VCO bias resistor terminal
172	AVDD	—	Power supply +3.3V (analog) for the clock
173	AVSS	—	Ground terminal (analog)
174	TEST4	I/O	ADCCKOUT clock output
175	ROUT	O	DAC output Not used (open)
176	AVDD	—	Power supply +5V (analog) for the internal DAC
177	AVSS	—	Ground terminal (analog)
178	LOUT	O	DAC output Not used (open)
179	DACDATA	O	DAC serial data output Not used (open)
180	DACLRCK	O	DAC LRCK output Not used (open)
181	DACBCK	O	DAC BCK output Not used (open)
182	DVDD	—	Power supply +3.3V (digital)
183	DVSS	—	Ground terminal (digital)
184	ADCDATA	I	ADC serial data input Not used (fixed at "L")
185	ADCBCK	O	ADC BCK output Not used (open)
186	ADCLRCK	O	ADC LRCK output Not used (open)
187	AUXDATA	I	External serial data input Not used (open)
188	AUXBCK	I	External BCK input Not used (fixed at "L")
189	AUXLRCK	I	External LRCK input Not used (fixed at "L")

Pin No.	Pin Name	I/O	Description
190	DVDD	—	Power supply +5V (digital)
191	DVSS	—	Ground terminal (digital)
192	ADCSTBY	O	ADC standby signal output
193	AUXTX	I	DIT data input Not used (fixed at “L”)
194	DITOUT	O	DIT data output
195	TEST3	I/O	Used as EXTDACEMP input (fixed at “L”)
196	SBDATA	I/O	Sub-code I/F serial data input/output (fixed at “L”)
197	CLCK	I/O	Sub-code I/F data shift clock input/output (fixed at “L”)
198	SFSY	I/O	Sub-code I/F frame sync signal input/output (fixed at “L”)
199	SBSY	I/O	Sub-code I/F block sync signal input/output (fixed at “L”)
200	ZRAS	O	Row address strobe signal output to the buffer RAM for audio data delay
201	ZCAS	O	Column address strobe signal output to the buffer RAM for audio data delay
202	ZWE	O	Write enable signal output to the buffer RAM for audio data delay
203	ZOE	O	Read enable signal output to the buffer RAM for audio data delay
204 to 207	RA0 to RA3	O	Address signal output to the buffer RAM for audio data delay
208	DVDD	—	Power supply +3.3V (DRAM I/F)

• IC501 HD6433064BA02FV μCOM (CDR Board)

Pin No.	Pin Name	I/O	Description
1	VCL	—	Capacitor connection terminal for the internal power supply
2	XCSCDR	O	Chip select signal output to the IC201
3 to 5	NU	—	Not used (fixed at "H")
6	XRSTRFP	O	Register reset signal output to the IC101
7	XREQI	I	Data request signal from the IC1
8	XRDYO	O	Data ready signal to the IC1
9	XRSTCDR	O	Reset signal to the IC201
10	FWE	I	Flash memory write enable signal input
11	VSS	—	Ground terminal
12	SDATAO(PROM)	O	Serial data output to the IC101 and IC502
13	SDATAO(HOST)	O	Serial data output to the IC1
14	SDATAI(PROM)	I	Serial data input from the IC502
15	SDATAI(HOST)	I	Serial data input from the IC1
16	SCLKO	O	Clock output to the IC101 and IC502
17	SUB_SYNC	I	Sub-code sync signal input from the IC201
18	RSBETA	O	β measurement circuit reset signal output
19, 20	NU	—	Not used (fixed at "H")
21	MIRR/XRC	O	MIRR or RC selection signal output
22	VSS	—	Ground terminal
23	AGCON	O	AGC enable signal output to the IC101
24	XRW/R	O	CD-RW selection signal output to the IC101
25	VRDSW	O	Read laser driver time constant selection switch control signal output to the IC101
26	VWDSW	O	Write laser driver time constant selection switch control signal output to the IC101
27 to 34	D8 to D15	I/O	Data bus with the IC201
35	VCC	—	Power supply (+5V)
36 to 43	A0 to A7	O	Command register selection address signal output to the IC201
44	VSS	—	Ground terminal
45 to 56	A8 to A19	O	Not used (fixed at "H")
57	VSS	—	Ground terminal
58	NU	—	Not used
59	CS	O	Chip select signal output to the IC502
60	XLAT	O	Data latch signal output to the IC101
61	ATIPSYNC	I	ATIP SYNC signal input from the IC201
62	XSTBY	I	Not used (fixed at "H")
63	XREST	I	System reset signal input
64	XP.DOWN	I	Not used
65	VSS	—	Ground terminal
66	EXTAL	I	Ceramic resonator connection terminal
67	XTAL	I	Ceramic resonator connection terminal
68	VCC	—	Power supply (+5V)
69	XAS	O	Not used
70	XRD	O	Data read signal output to the IC201
71	XHWR	O	Data write signal output to the IC201
72	XLWR	O	Not used
73	MD0(H)	I	Mode selector (fixed at "H")
74	MD1(L)	I	Mode selector (fixed at "L")
75	MD2	I	Mode selector (normally fixed at "H")
76	AVCC	—	Power supply (+5V) for the A/D converter
77	AVREF	—	Reference voltage for the A/D converter
78	KEY	I	Key scan signal input

Pin No.	Pin Name	I/O	Description
79	BCENT	I	Center signal input from the IC101
80	PHBETA	I	β signal top level signal input from the IC101
81	BHBETA	I	β signal bottom level signal input from the IC101
82	VREF	I	Reference voltage input terminal
83	MPX	I	Monitor multiplexer signal input from the IC101
84	TMP	I	THERMOUT signal input
85	VWDC2	O	VWDC2 signal output to the optical pick-up
86	AVSS	—	Ground terminal for the A/D converter
87	XINTCDR	I	Interrupt request signal input from the IC201
88	RECD	I	Recorded block detection signal input from the IC101
89	XTAND	I	Tracking failure detection signal input from the IC101
90	SPFG	I	Not used
91	XIN/EXT	I	RS-232C “H” detection signal input
92	VSS	—	Ground terminal
93	SLFG	I	ENCOUT signal input
94	TZC	I	Tracking zero cross detection signal input from the IC101
95	SPFG	I	FG signal input from the motor driver (IC172)
96	XMMUTE	O	Muting signal output to the IC171 and IC172
97	INSW	I	LOAD IN switch (S170) signal input
98	OUTSW	I	LOAD OUT switch (S171) signal input
99	REV	O	Loading motor control signal output to the IC171
100	FWD	O	Loading motor control signal output to the IC171

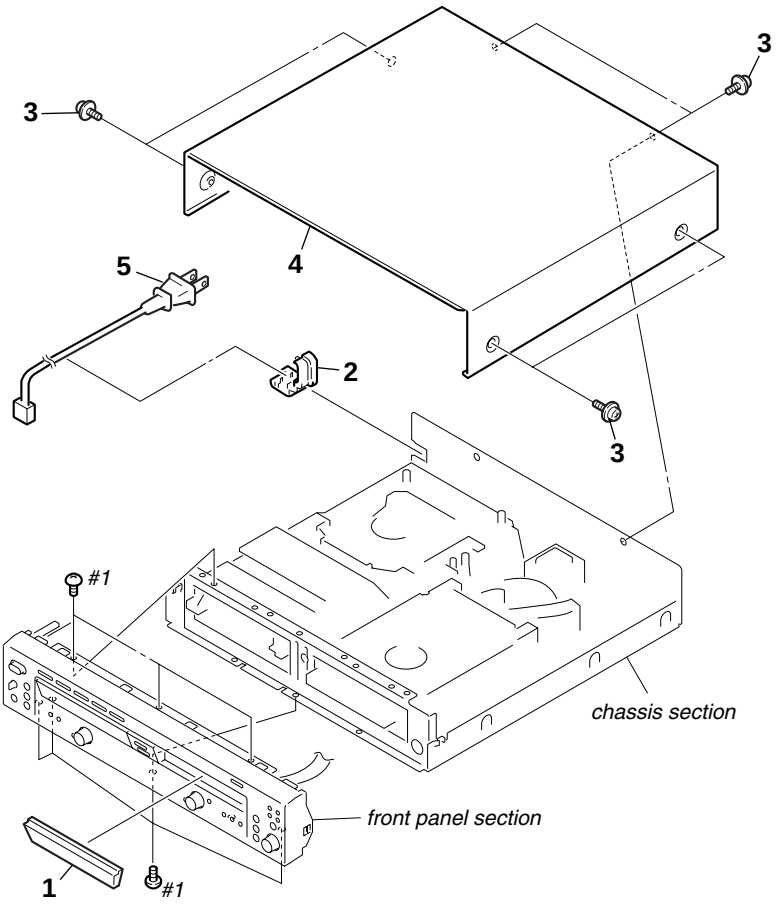
SECTION 7
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of this parts list.
- Abbreviation
  CND : Canadian model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

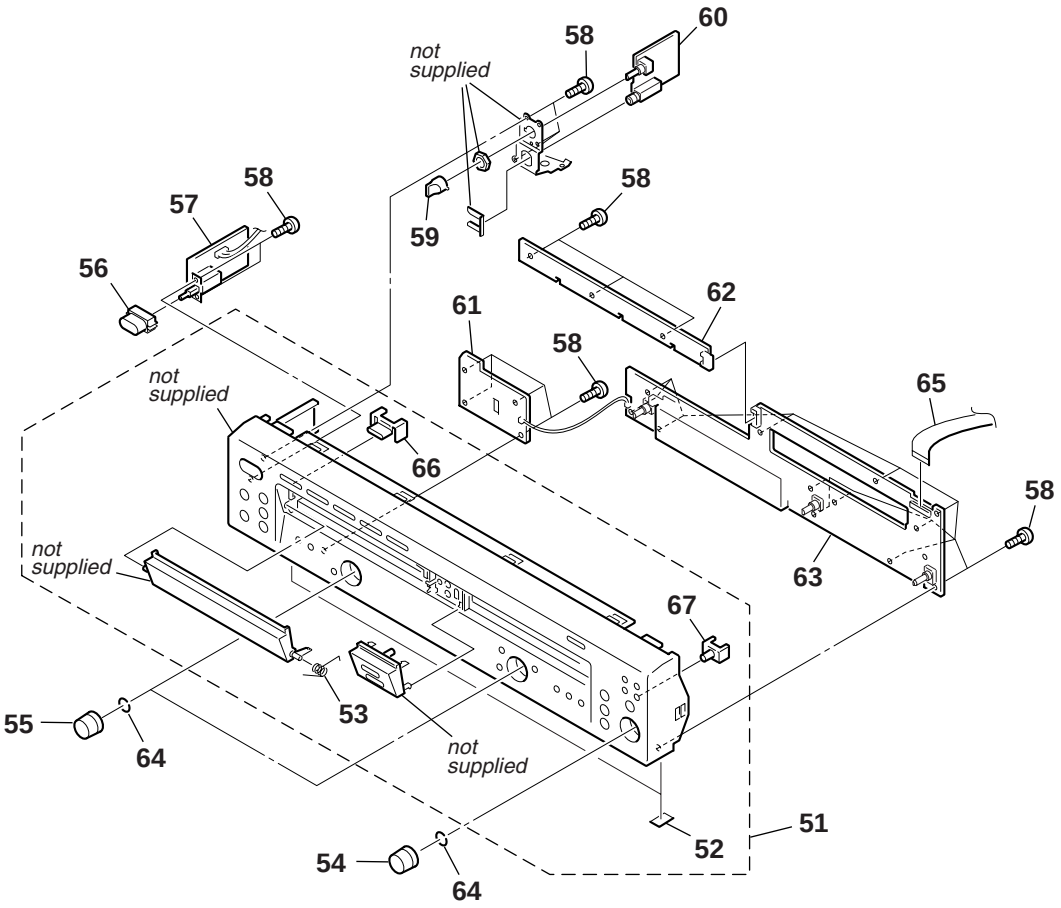
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

7-1. Case Section



Ref. No.	Part No.	Description	Remarks
1	4-246-073-01	PANEL (CDR), LOADING	
* 2	3-703-244-00	BUSHING (2104), CORD	
3	4-210-291-01	SCREW (CASE 3 TP2)	
4	4-231-686-11	CASE (409538)	
⚠5	1-783-531-42	CORD, POWER	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	

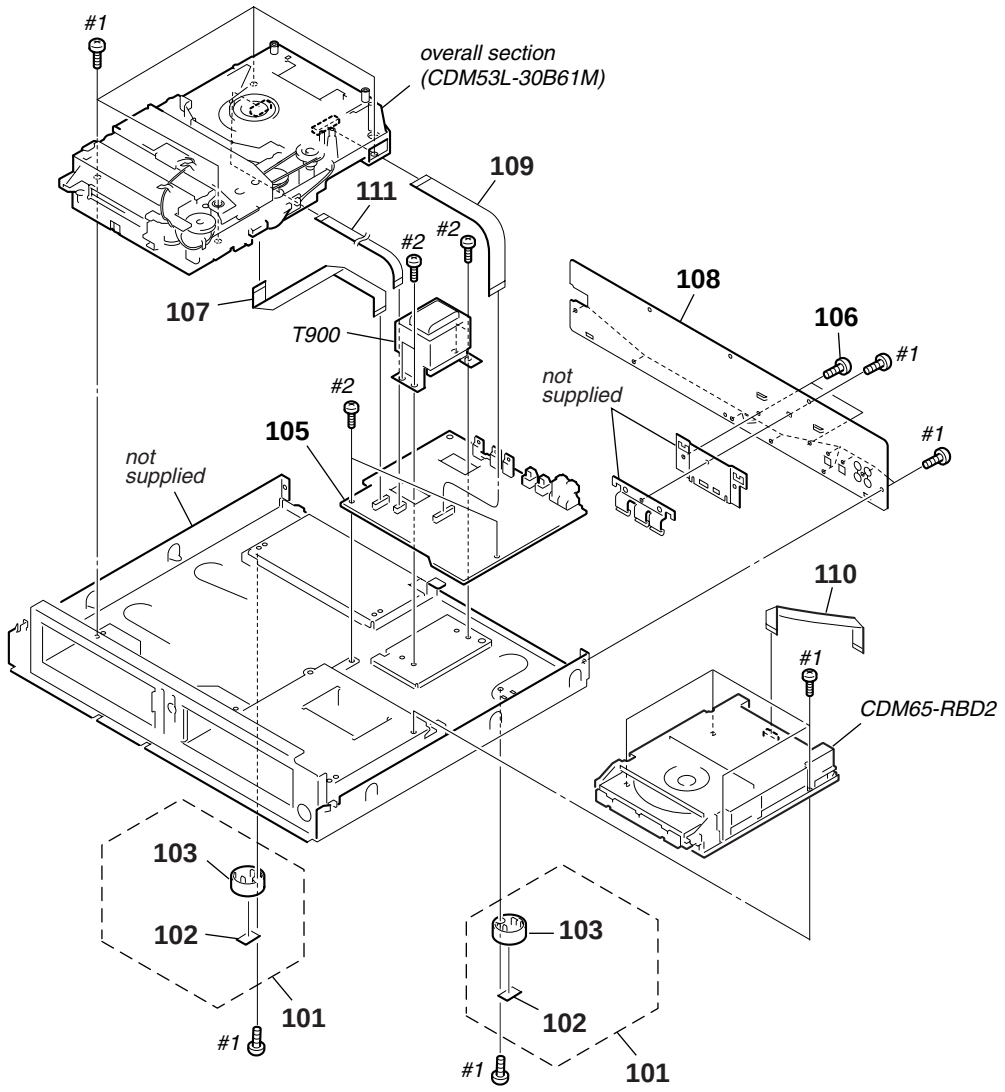
7-2. Front Panel Section



Ref. No.	Part No.	Description	Remarks
51	X-4955-524-1	PANEL ASSY, FRONT	
52	4-977-358-01	CUSHION	
53	4-241-393-01	SPRING, TORSION	
54	4-238-396-11	KNOB (AMS)	
55	4-238-396-01	KNOB (AMS)	
56	4-231-973-01	BUTTON (POWER)	
57	1-683-869-21	POWER BOARD	
58	4-951-620-01	SCREW (2.6X8), +BVTP	
59	3-931-378-51	KNOB (F10)	

Ref. No.	Part No.	Description	Remarks
60	1-683-868-21	HP BOARD	
61	1-683-867-21	SW BOARD	
62	A-4732-812-A	LED BOARD, COMPLETE	
63	A-4732-814-A	DISP BOARD, COMPLETE	
64	3-354-981-11	SPRING(SUS),RING	
65	1-823-923-11	WIRE (FLAT TYPE) (21 CORE)	
66	4-238-386-21	BUTTON (OPEN/CLOSE)	
67	4-238-385-01	BUTTON (SBM)	

7-3. Chassis Section

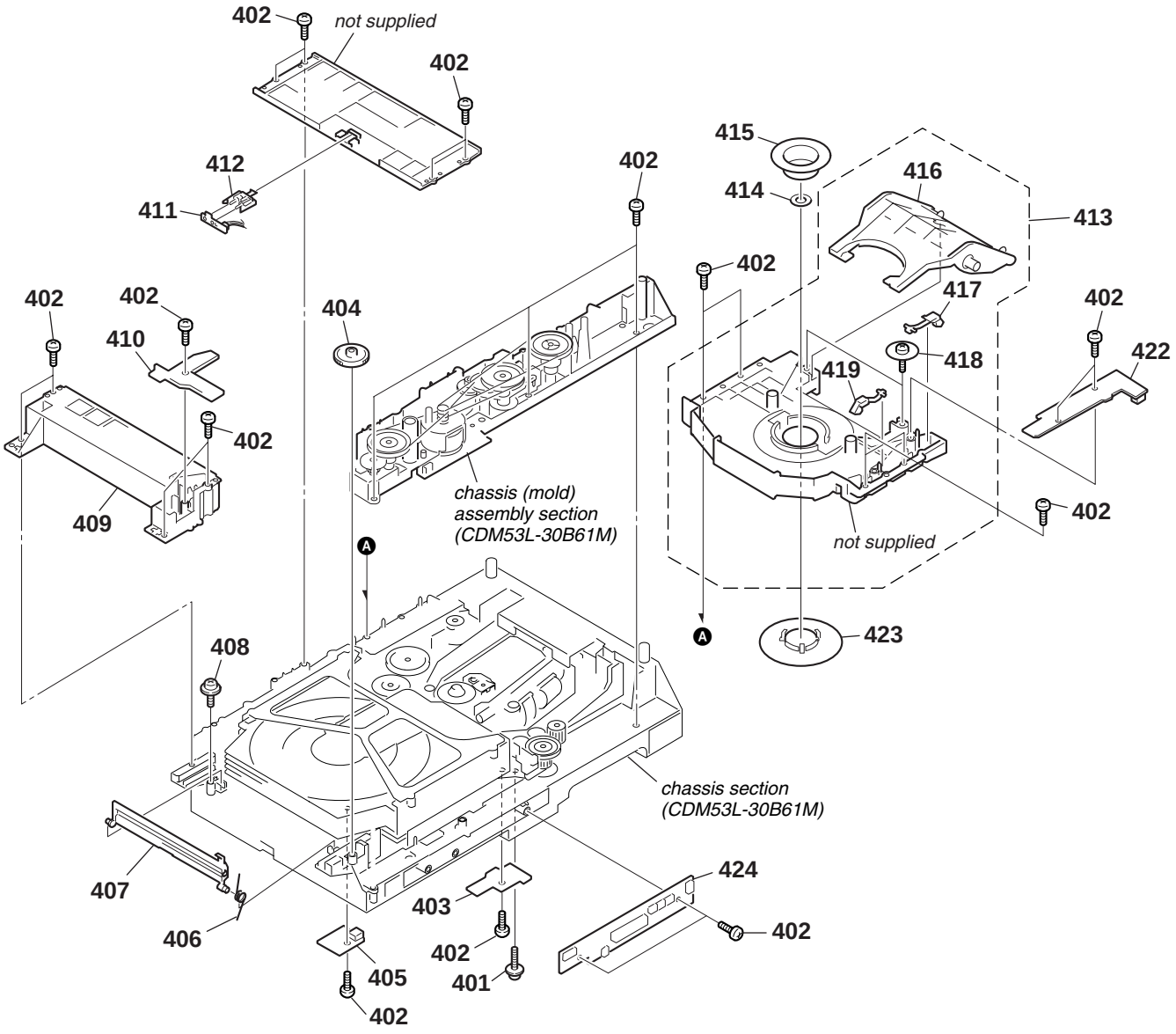


Ref. No.	Part No.	Description	Remarks
101	X-4953-448-1	FOOT ASSY	
102	4-977-358-01	CUSHION	
103	4-232-237-01	FOOT (DIA. 30)	
105	A-4732-811-A	MAIN BOARD, COMPLETE	
106	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6	
107	1-823-925-11	WIRE(FLAT TYPE) (17CORE)	
108	4-246-074-01	PANEL, BACK (US)	
108	4-246-074-11	PANEL, BACK (CND)	

Ref. No.	Part No.	Description	Remarks
109	1-782-881-11	WIRE(FLAT TYPE) (25CORE)	
110	1-823-922-11	WIRE(FLAT TYPE) (11CORE)	
111	1-782-864-11	WIRE (FLAT TYPE) (9 CORE)	
⚠T900	1-439-732-11	TRANSFORMER, POWER	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	

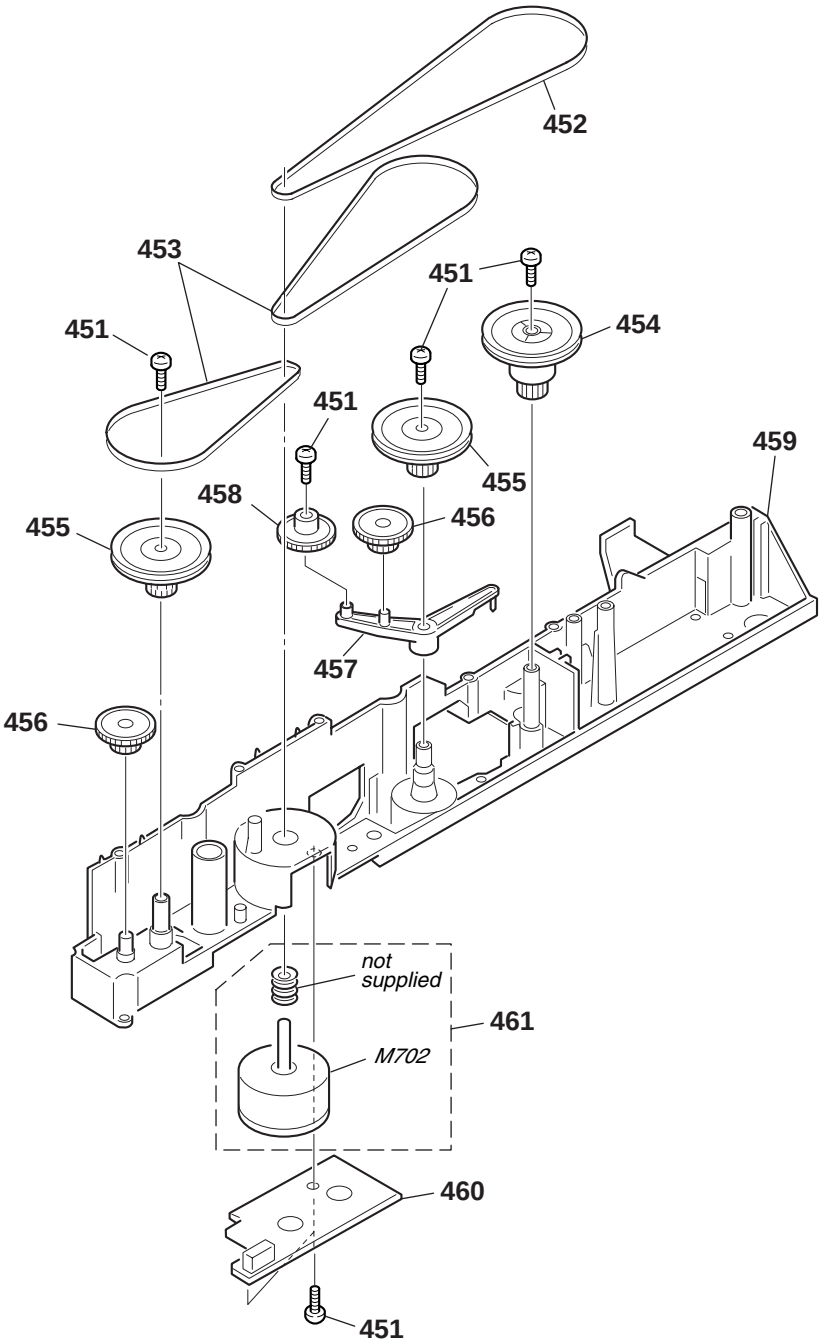
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-4. Overall Section (CDM53L-30B61M)



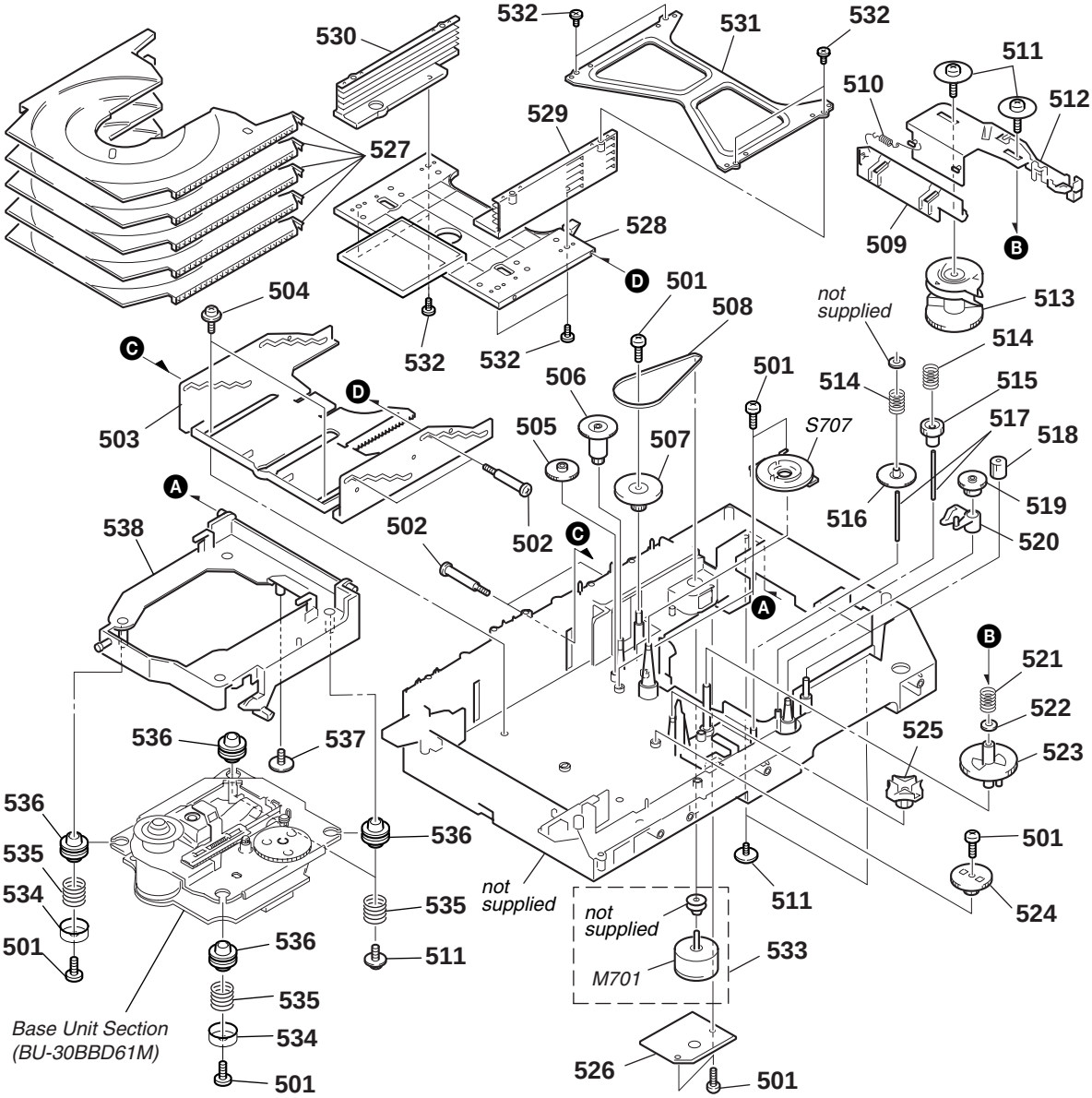
Ref. No.	Part No.	Description	Remarks
401	3-341-549-01	SCREW(2.6X12)(DIA.7.5),+PTP WH	
402	4-218-253-11	SCREW (M2.6), +BTTP	
403	1-675-724-11	INIT/COUNT SW BOARD	
404	4-211-215-01	GEAR (EJECT)	
405	1-675-726-11	SENSOR BOARD	
406	4-212-676-01	SPRING (LID), TORSION	
407	4-221-532-11	LID (DISC)	
408	4-933-134-01	SCREW (M2.6), +PTPWH	
409	A-4672-909-C	BASE (GUIDE) ASSY, FITTING	
410	1-675-725-11	OUT SW BOARD	
411	1-675-727-11	SENSOR 2 BOARD	
412	4-964-461-02	HOLDER (SENSOR)	
413	A-4746-928-A	BASE (MAGNET) ASSY, FITTING	
414	4-228-414-01	BRACKET (YOKE)	
415	4-227-513-01	PULLEY (4SB)	
416	4-222-783-01	LEVER (LIFTER)	
417	4-221-530-01	LEVER (DETECTION C)	
418	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
419	4-221-528-01	LEVER (DETECTION A)	
422	1-675-723-11	IN SW BOARD	
423	X-4952-916-1	PULLEY (FK) ASSY, CHUCKING	
424	1-675-722-11	CONNECTOR BOARD	

7-5. Chassis (Mold) Assy Section (CDM53L-30B61M)



Ref. No.	Part No.	Description	Remarks
451	4-218-253-11	SCREW (M2.6), +BTTP	
452	4-211-235-01	BELT (COMMUNICATION)	
453	4-241-745-01	BELT (LOADING 1)	
454	4-211-231-01	PULLEY (MODE)	
455	4-211-214-01	PULLEY (LD)	
456	4-211-232-01	GEAR (LD DECELERATION)	
457	4-211-228-01	LEVER (GOOSENECK)	
458	4-214-130-01	GEAR (TRAY)	
459	4-221-505-11	CHASSIS (MOLD B)	
460	1-675-728-11	LOAD MOTOR BOARD	
461	X-4950-342-1	MOTOR (LOADING) ASSY	
M702	1-541-632-12	MOTOR, DC (LOADING)	

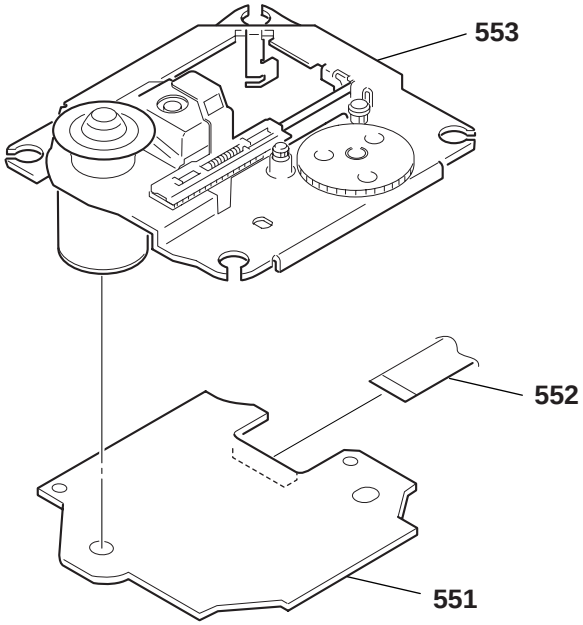
7-6. Chassis Section (CDM53L-30B61M)



Ref. No.	Part No.	Description	Remarks
501	4-218-253-11	SCREW (M2.6), +BTTP	
502	4-211-244-01	SCREW, STEP	
503	4-211-223-01	SLIDER (U/D)	
504	4-933-134-01	SCREW (M2.6), +PTPWH	
505	4-211-215-01	GEAR (EJECT)	
506	4-211-232-01	GEAR (MODE DECELERATION)	
507	4-211-214-01	PULLEY (LD)	
508	4-211-237-01	BELT (MODE)	
509	4-212-677-01	SLIDER (SHUTTER)	
510	4-212-678-01	SPRING (SHUTTER), TENSION	
511	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
512	4-211-233-01	SLIDER (SELECTION)	
513	4-211-230-01	GEAR (CHUCKING)	
514	4-211-245-01	SPRING, COMPRESSION	
515	4-211-221-01	GEAR (LD MOVABLE)	
516	4-211-217-01	GEAR (SELECTION)	
517	4-211-242-11	SHAFT (SELECTION GEAR)	
518	4-211-240-01	GEAR (LD DECELERATION B)	
519	4-211-216-01	GEAR (RELAY)	
520	4-211-241-01	LEVER (SELECTION)	

Ref. No.	Part No.	Description	Remarks
521	4-216-879-01	SPRING (GEAR), COMPRESSION	
522	3-701-446-21	WASHER	
523	4-211-218-01	GEAR (GEAR A)	
524	4-211-220-01	GEAR (U/D SLIDER)	
525	4-211-219-01	GEAR (GEAR B)	
526	1-675-729-11	CLAMP MOTOR BOARD	
527	4-211-212-51	TRAY (SUB)	
528	4-221-504-01	BASE (STOCKER), FITTING	
529	4-211-211-01	STOCKER (R)	
530	4-211-210-01	STOCKER (L)	
531	4-211-234-01	BRACKET (STOCKER T)	
532	4-218-253-21	SCREW (M2.6), +BTTP	
533	X-4950-341-1	MOTOR (CLAMP) ASSY	
534	4-231-151-01	STOPPER (BU)	
535	4-227-045-11	SPRING (INSULATOR), COIL	
536	4-240-820-01	INSULATOR (B)(BU-30B)	
537	4-227-899-01	SCREW (DIA.12), FROATING	
538	X-4954-297-2	HOLDER (BU30) ASSY	
M701	1-541-632-12	MOTOR, DC (ELEVATOR)	
S707	1-418-045-01	ENCODER, ROTARY	

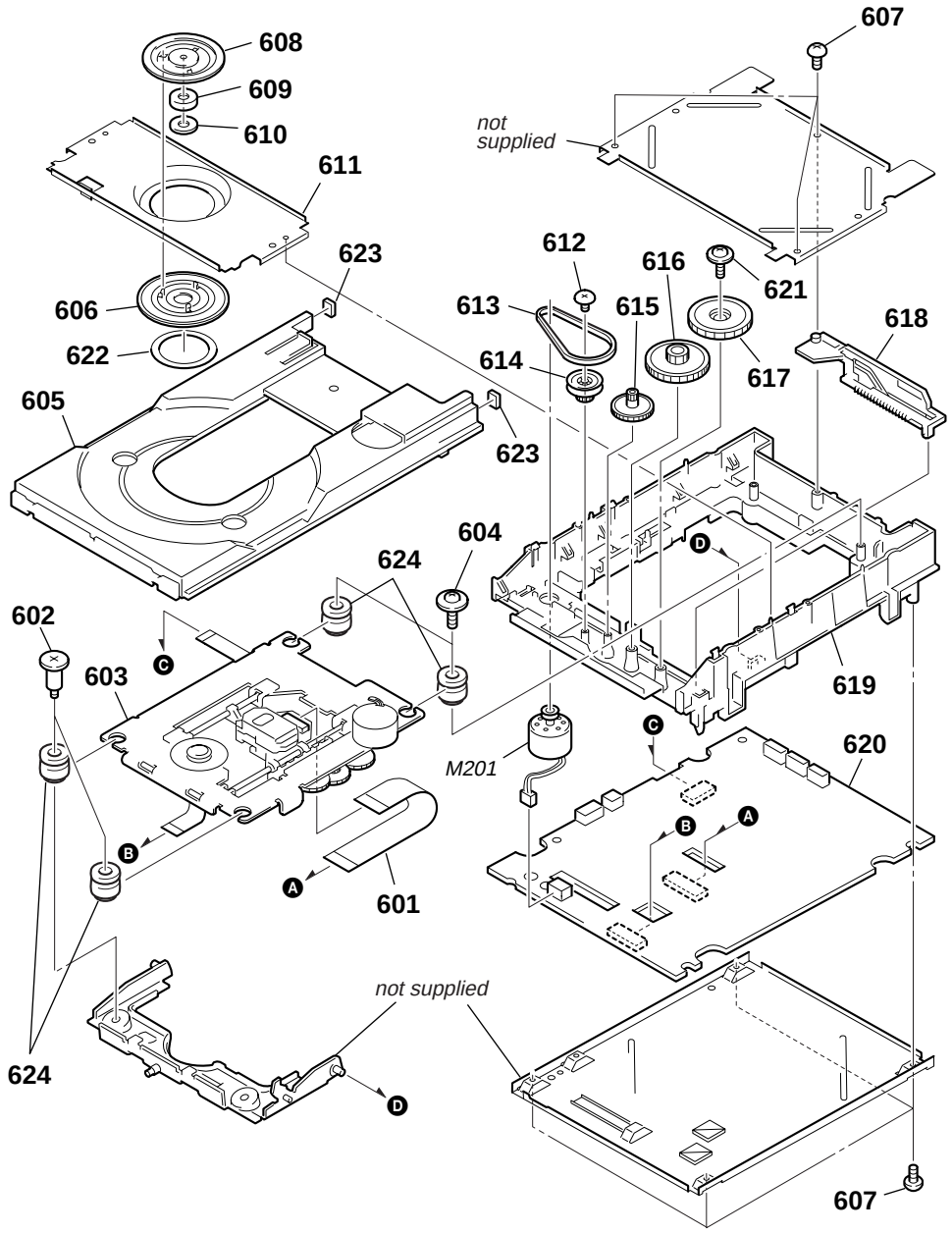
7-7. Base Unit Section (BU-30BBD61M)



Ref. No.	Part No.	Description	Remarks
551	A-4732-100-A	BD BOARD, COMPLETE	
552	1-782-817-11	WIRE (FLAT TYPE)(16 CORE)	
⚠553	A-4735-885-A	BU-30B ASSY	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-8. CDM65-RBD2



Ref. No.	Part No.	Description	Remarks
601	1-823-651-11	CABLE, FLEXIBLE FLAT (32 CORE)	
602	4-237-168-01	SCREW, STEP	
⚠603	8-583-104-01	OPTICAL PICK-UP (KRM-220CAA)	
604	4-237-167-01	SCREW (2X9) (G WITH),+P TAPPIN	
605	4-237-181-01	TRAY	
606	4-237-174-01	PULLEY (MAG)	
607	4-951-620-01	SCREW (2.6X8), +BVTP	
608	4-240-988-02	PULLEY (UPPER), PRESS	
* 609	1-452-958-11	MAGNET (CHUCKING)	
* 610	4-974-710-11	YOKE, PULLEY	
611	4-237-172-01	HOLDER (MG)	
612	4-974-711-01	SCREW (2X5)(P TYIGHT),(+)PTTWH	

Ref. No.	Part No.	Description	Remarks
613	4-999-537-01	BELT (LOADING)	
614	4-237-176-02	PULLEY (CG)	
615	4-237-177-02	GEAR (A)	
616	4-237-178-02	GEAR (B)	
617	4-237-179-02	GEAR (C)	
618	4-237-180-01	CAM (CH)	
619	4-237-182-01	CHASSIS	
620	A-4732-808-A	CDR BOARD, COMPLETE	
621	3-341-549-01	SCREW(2.6X8)(DIA.7.5),+ PTP WH	
622	4-240-987-01	SHEET (DR)	
623	4-232-682-01	CUSHION (66)	
624	2-166-060-01	INSULATOR (MAIN)	
M201	A-4735-557-A	MOTOR ASSY (LOADING)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

BD

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...
- Abbreviation
  CND : Canadian model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
	A-4732-100-A	BD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C102	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C103	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C104	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C107	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C108	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C109	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C110	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C111	1-126-607-11	ELECT CHIP	47uF	20%	4V
C112	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C113	1-128-995-21	ELECT CHIP	100uF	20%	10V
C114	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C115	1-128-995-21	ELECT CHIP	100uF	20%	10V
C116	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C117	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C118	1-115-156-11	CERAMIC CHIP	1uF		10V
C119	1-115-156-11	CERAMIC CHIP	1uF		10V
C121	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C131	1-110-563-11	CERAMIC CHIP	0.068uF	10.00%	16V
C132	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C133	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C150	1-128-394-11	ELECT CHIP	220uF	20%	10V
C151	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C152	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C153	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C156	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C157	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C158	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C159	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C160	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C161	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C163	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C164	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C165	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C169	1-128-394-11	ELECT CHIP	220uF	20%	10V
C202	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C203	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C208	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C209	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C211	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V
C212	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C213	1-115-414-11	CERAMIC CHIP	820PF	5.00%	25V
C215	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V
C216	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C222	1-115-156-11	CERAMIC CHIP	1uF		10V
C224	1-115-156-11	CERAMIC CHIP	1uF		10V
C226	1-126-607-11	ELECT CHIP	47uF	20%	4V
C227	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C228	1-115-156-11	CERAMIC CHIP	1uF		10V
C229	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C230	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C231	1-128-394-11	ELECT CHIP	220uF	20%	10V
C248	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C249	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C250	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C251	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C253	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C254	1-162-913-11	CERAMIC CHIP	8PF	0.50PF	50V
C255	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C256	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C257	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C258	1-162-913-11	CERAMIC CHIP	8PF	0.50PF	50V
C259	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C260	1-131-998-21	ELECT CHIP	82uF	20%	6.3V
C266	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C270	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C271	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C273	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C274	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C277	1-216-864-11	METAL CHIP	0	5%	1/10W
C292	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C301	1-115-414-11	CERAMIC CHIP	820PF	5.00%	25V
C302	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C303	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C304	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C305	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C307	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C310	1-164-360-11	CERAMIC CHIP	0.1uF		16V
		< CONNECTOR >			
CN101	1-794-424-11	CONNECTOR, FCC/FPC 16P			
CN103	1-784-875-21	CONNECTOR,FFC(LIF(NON-ZIF))25P			
CN105	1-784-861-21	CONNECTOR, FFC(LIF(NON-ZIF))9P			

Ref. No.	Part No.	Description			Remarks
		< FERRITE BEAD >			
FB101	1-216-295-91	SHORT CHIP	0		
FB102	1-216-864-11	METAL CHIP	0	5%	1/10W
FB103	1-216-864-11	METAL CHIP	0	5%	1/10W
FB104	1-216-864-11	METAL CHIP	0	5%	1/10W
* FB161	1-469-670-21	FERRITE	0uH		
FB201	1-216-295-91	SHORT CHIP	0		
* FB202	1-469-670-21	FERRITE	0uH		
FB203	1-500-283-11	FERRITE	0uH		
FB291	1-216-864-11	METAL CHIP	0	5%	1/10W
FB351	1-216-864-11	METAL CHIP	0	5%	1/10W
		< IC >			
IC101	8-752-408-73	IC CXD3068Q			
IC102	8-759-713-71	IC AN41050			
IC103	8-752-106-21	IC CXA2647N-T4			
IC104	6-704-150-01	IC CXD9717R-008			
IC105	8-759-833-99	IC TC74HC4052AFT(EL)			
IC122	6-701-808-01	IC BA33C25FP-E2			
		< JUMPER RESISTOR >			
JR2	1-216-864-11	METAL CHIP	0	5%	1/10W
		< COIL >			
L163	1-412-967-31	INDUCTOR	0.1uH		
		< TRANSISTOR >			
Q101	8-729-046-90	TRANSISTOR	2SB970-(TX).S0		
		< RESISTOR >			
R101	1-216-864-11	METAL CHIP	0	5%	1/10W
R102	1-216-835-11	METAL CHIP	15K	5%	1/10W
R103	1-216-845-11	METAL CHIP	100K	5%	1/10W
R104	1-216-835-11	METAL CHIP	15K	5%	1/10W
R105	1-216-821-11	METAL CHIP	1K	5%	1/10W
R111	1-216-847-11	METAL CHIP	150K	5%	1/10W
R113	1-218-701-11	METAL CHIP	2.4K	5%	1/10W
R114	1-216-852-11	METAL CHIP	390K	5%	1/10W
R115	1-216-839-11	METAL CHIP	33K	5%	1/10W
R116	1-216-839-11	METAL CHIP	33K	5%	1/10W
R117	1-216-846-11	METAL CHIP	120K	5%	1/10W
R118	1-216-833-11	METAL CHIP	10K	5%	1/10W
R120	1-216-846-11	METAL CHIP	120K	5%	1/10W
R122	1-216-845-11	METAL CHIP	100K	5%	1/10W
R123	1-216-791-11	METAL CHIP	3.3	5%	1/10W
R125	1-216-840-11	METAL CHIP	39K	5%	1/10W
R126	1-216-840-11	METAL CHIP	39K	5%	1/10W
R131	1-216-843-11	METAL CHIP	68K	5%	1/10W
R132	1-216-851-11	METAL CHIP	330K	5%	1/10W
R133	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R151	1-216-833-11	METAL CHIP	10K	5%	1/10W
R152	1-216-837-11	METAL CHIP	22K	5%	1/10W
R155	1-216-840-11	METAL CHIP	39K	5%	1/10W
R157	1-216-864-11	METAL CHIP	0	5%	1/10W
R158	1-216-821-11	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R166	1-216-864-11	METAL CHIP	0	5%	1/10W
R167	1-216-864-11	METAL CHIP	0	5%	1/10W
R168	1-216-864-11	METAL CHIP	0	5%	1/10W
R169	1-216-864-11	METAL CHIP	0	5%	1/10W
R199	1-216-864-11	METAL CHIP	0	5%	1/10W
R201	1-216-839-11	METAL CHIP	33K	5%	1/10W
R202	1-216-833-11	METAL CHIP	10K	5%	1/10W
R203	1-216-845-11	METAL CHIP	100K	5%	1/10W
R204	1-216-833-11	METAL CHIP	10K	5%	1/10W
R205	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R206	1-216-850-11	METAL CHIP	270K	5%	1/10W
R207	1-216-853-11	METAL CHIP	470K	5%	1/10W
R208	1-216-811-11	METAL CHIP	150	5%	1/10W
R216	1-216-857-11	METAL CHIP	1M	5%	1/10W
R218	1-216-821-11	METAL CHIP	1K	5%	1/10W
R219	1-216-821-11	METAL CHIP	1K	5%	1/10W
R220	1-216-821-11	METAL CHIP	1K	5%	1/10W
R221	1-216-809-11	METAL CHIP	100	5%	1/10W
R222	1-216-809-11	METAL CHIP	100	5%	1/10W
R223	1-216-809-11	METAL CHIP	100	5%	1/10W
R224	1-216-809-11	METAL CHIP	100	5%	1/10W
R225	1-216-809-11	METAL CHIP	100	5%	1/10W
R226	1-216-809-11	METAL CHIP	100	5%	1/10W
R227	1-216-809-11	METAL CHIP	100	5%	1/10W
R228	1-216-809-11	METAL CHIP	100	5%	1/10W
R229	1-216-809-11	METAL CHIP	100	5%	1/10W
R230	1-216-811-11	METAL CHIP	150	5%	1/10W
R231	1-216-815-11	METAL CHIP	330	5%	1/10W
R232	1-216-815-11	METAL CHIP	330	5%	1/10W
R233	1-216-815-11	METAL CHIP	330	5%	1/10W
R249	1-216-818-11	METAL CHIP	560	5%	1/10W
R250	1-216-813-11	METAL CHIP	220	5%	1/10W
R251	1-216-813-11	METAL CHIP	220	5%	1/10W
R252	1-216-833-11	METAL CHIP	10K	5%	1/10W
R253	1-216-813-11	METAL CHIP	220	5%	1/10W
R255	1-216-809-11	METAL CHIP	100	5%	1/10W
R257	1-216-809-11	METAL CHIP	100	5%	1/10W
R259	1-216-809-11	METAL CHIP	100	5%	1/10W
R260	1-216-821-11	METAL CHIP	1K	5%	1/10W
R271	1-216-833-11	METAL CHIP	10K	5%	1/10W
R272	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R275	1-216-833-11	METAL CHIP	10K	5%	1/10W
R276	1-216-809-11	METAL CHIP	100	5%	1/10W
R279	1-216-809-11	METAL CHIP	100	5%	1/10W
R291	1-216-864-11	METAL CHIP	0	5%	1/10W
R301	1-216-847-11	METAL CHIP	150K	5%	1/10W
R302	1-216-842-11	METAL CHIP	56K	5%	1/10W
R304	1-216-809-11	METAL CHIP	100	5%	1/10W
R305	1-216-845-11	METAL CHIP	100K	5%	1/10W
R308	1-500-283-11	FERRITE	0uH		
R309	1-500-283-11	FERRITE	0uH		
R312	1-216-864-11	METAL CHIP	0	5%	1/10W
R313	1-216-864-11	METAL CHIP	0	5%	1/10W
R314	1-216-864-11	METAL CHIP	0	5%	1/10W
R315	1-216-864-11	METAL CHIP	0	5%	1/10W
R318	1-216-864-11	METAL CHIP	0	5%	1/10W
R320	1-216-864-11	METAL CHIP	0	5%	1/10W

BD **CDR**

Ref. No.	Part No.	Description			Remarks
		< VARIABLE RESISTOR >			
RV101	1-223-997-21	RES, CARBON ADJ VAR 47K			
		< VIBRATOR >			
X201	1-767-518-11	VIBRATOR, CRYSTAL (33.8688MHz)			
**********					
	A-4732-808-A	CDR BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C103	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C104	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C105	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C106	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C107	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C108	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C109	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C110	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C111	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C112	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C113	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C114	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C115	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C116	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C117	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C118	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C119	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C120	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C121	1-126-392-11	ELECT CHIP	100uF	20.00%	6.3V
C122	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C123	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C124	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C125	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C126	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C128	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C129	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C130	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C131	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C132	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C134	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C135	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C136	1-126-391-11	ELECT CHIP	47uF	20.00%	6.3V
C137	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C138	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C139	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C140	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
C141	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C142	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C143	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C144	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C145	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C146	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C150	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C151	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C154	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C155	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C157	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
C158	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
C160	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C178	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C179	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C180	1-126-395-11	ELECT	22uF	20%	16V
C181	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C182	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C183	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C184	1-126-395-11	ELECT	22uF	20%	16V
C185	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C186	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C187	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C188	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C189	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C190	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C191	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C192	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C193	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C194	1-126-395-11	ELECT	22uF	20%	16V
C200	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
C201	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C202	1-126-392-11	ELECT CHIP	100uF	20.00%	6.3V
C203	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C204	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C205	1-126-391-11	ELECT CHIP	47uF	20.00%	6.3V
C206	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C207	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C208	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C209	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C210	1-126-392-11	ELECT CHIP	100uF	20.00%	6.3V
C212	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
C213	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C214	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C216	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C217	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C218	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C219	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C220	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C221	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C222	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C223	1-164-677-11	CERAMIC CHIP	0.033uF	10.00%	16V
C224	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C225	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C226	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C227	1-162-914-11	CERAMIC CHIP	9PF	0.50PF	50V
C228	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C230	1-162-914-11	CERAMIC CHIP	9PF	0.50PF	50V
C232	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C233	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C234	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C235	1-125-891-11	CERAMIC CHIP	0.47	10.00%	10V
C236	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C237	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C238	1-164-156-11	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remarks
C239	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C240	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C241	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C242	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C244	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
C245	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C246	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C247	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C248	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C249	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C251	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C254	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C257	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C258	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C259	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C260	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C262	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C263	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C268	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C269	1-126-392-11	ELECT CHIP	100uF	20.00%	6.3V
C270	1-126-396-11	ELECT CHIP	47uF	20.00%	16V
C271	1-126-392-11	ELECT CHIP	100uF	20.00%	6.3V
C272	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C273	1-126-391-11	ELECT CHIP	47uF	20.00%	6.3V
C275	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C289	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C301	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C302	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C303	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C304	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C501	1-126-396-11	ELECT CHIP	47uF	20.00%	16V
C502	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C503	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C504	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C506	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C508	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C509	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C513	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C517	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C518	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C519	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C520	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C521	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C526	1-164-156-11	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN101	1-784-894-11	CONNECTOR, FFC/FPC 32P			
CN102	1-816-220-21	CONNECTOR, FFC/FPC 11P			
CN103	1-816-220-21	CONNECTOR, FFC/FPC 11P			
CN104	1-770-160-21	PIN, CONNECTOR (PC BOARD) 2P			
CN110	1-784-370-21	CONNECTOR, FFC/FPC 11P			
* CN111	1-764-250-11	PIN, CONNECTOR (PC BOARD) 4P			
CN112	1-784-365-21	CONNECTOR, FFC/FPC 5P			
CN115	1-770-160-21	PIN, CONNECTOR (PC BOARD) 2P			
CN121	1-774-731-21	PIN, CONNECTOR (PC BOARD) 5P			

Ref. No.	Part No.	Description			Remarks
		< DIODE >			
D101	8-719-988-61	DIODE 1SS355TE-17			
D102	8-719-988-61	DIODE 1SS355TE-17			
		< FERRITE BEAD >			
FB101	1-469-379-11	FERRITE	0uH		
FB102	1-469-379-11	FERRITE	0uH		
FB103	1-469-379-11	FERRITE	0uH		
		< IC >			
IC101	6-701-749-01	IC AK8567			
IC102	8-759-058-56	IC TC7S02FU(TE85R)			
IC103	8-759-337-41	IC NJM2902V-TE2			
IC104	8-759-096-87	IC TC7WU04FU(TE12R)			
IC110	8-759-594-95	IC L4931ABD33-TR			
IC150	8-759-673-37	IC SN74HC00APWR			
IC171	6-701-746-01	IC BA5937AFP-E2			
IC172	8-759-593-08	IC LB11698H-TE-L			
IC201	6-701-747-01	IC LC89587-UK1-E			
IC202	8-759-597-78	IC MSM54V16258BSL-40TSK			
IC204	8-759-058-60	IC TC7SU04FU(TE85R)			
IC301	8-759-549-25	IC SN74LVU04APWR			
IC302	8-759-196-96	IC TC7SH08FU-TE85R			
IC501	6-803-240-01	IC HD6433064BA02FV			
IC502	6-801-552-01	IC BR93LC46RF-WE2			
IC503	8-759-592-47	IC TC7SZ08FU(TE85R)			
IC504	8-759-485-79	IC TC7SET08FU(TE85R)			
IC505	8-759-592-47	IC TC7SZ08FU(TE85R)			
IC506	8-759-485-79	IC TC7SET08FU(TE85R)			
		< COIL >			
L101	1-414-398-11	INDUCTOR	10uH		
L102	1-414-398-11	INDUCTOR	10uH		
L103	1-414-392-41	INDUCTOR	1uH		
L202	1-414-392-41	INDUCTOR	1uH		
L203	1-414-392-41	INDUCTOR	1uH		
L204	1-414-392-41	INDUCTOR	1uH		
L205	1-414-392-41	INDUCTOR	1uH		
L207	1-414-392-41	INDUCTOR	1uH		
L208	1-414-392-41	INDUCTOR	1uH		
L301	1-414-392-41	INDUCTOR	1uH		
L303	1-414-392-41	INDUCTOR	1uH		
L501	1-414-392-41	INDUCTOR	1uH		
L503	1-414-392-41	INDUCTOR	1uH		
		< RESISTOR >			
R101	1-216-809-11	METAL CHIP	100	5%	1/10W
R102	1-216-809-11	METAL CHIP	100	5%	1/10W
R103	1-216-809-11	METAL CHIP	100	5%	1/10W
R104	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R106	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R107	1-216-857-11	METAL CHIP	1M	5%	1/10W
R108	1-216-809-11	METAL CHIP	100	5%	1/10W
R109	1-216-809-11	METAL CHIP	100	5%	1/10W
R110	1-216-809-11	METAL CHIP	100	5%	1/10W
R111	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R112	1-218-879-11	METAL CHIP	22K	0.5%	1/10W

CDR

Ref. No.	Part No.	Description			Remarks
R113	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R114	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R116	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R120	1-216-809-11	METAL CHIP	100	5%	1/10W
R121	1-216-809-11	METAL CHIP	100	5%	1/10W
R122	1-216-857-11	METAL CHIP	1M	5%	1/10W
R123	1-216-864-11	METAL CHIP	0	5%	1/10W
R124	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R125	1-216-797-11	METAL CHIP	10	5%	1/10W
R126	1-216-864-11	METAL CHIP	0	5%	1/10W
R127	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R128	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R133	1-216-864-11	METAL CHIP	0	5%	1/10W
R134	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R135	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R136	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R137	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R139	1-216-833-11	METAL CHIP	10K	5%	1/10W
R140	1-216-833-11	METAL CHIP	10K	5%	1/10W
R141	1-216-833-11	METAL CHIP	10K	5%	1/10W
R142	1-216-833-11	METAL CHIP	10K	5%	1/10W
R153	1-216-809-11	METAL CHIP	100	5%	1/10W
R154	1-216-809-11	METAL CHIP	100	5%	1/10W
R155	1-216-809-11	METAL CHIP	100	5%	1/10W
R156	1-216-809-11	METAL CHIP	100	5%	1/10W
R157	1-216-797-11	METAL CHIP	10	5%	1/10W
R158	1-216-845-11	METAL CHIP	100K	5%	1/10W
R159	1-216-821-11	METAL CHIP	1K	5%	1/10W
R160	1-216-837-11	METAL CHIP	22K	5%	1/10W
R170	1-216-797-11	METAL CHIP	10	5%	1/10W
R171	1-216-797-11	METAL CHIP	10	5%	1/10W
R172	1-216-797-11	METAL CHIP	10	5%	1/10W
R173	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R186	1-216-845-11	METAL CHIP	100K	5%	1/10W
R187	1-216-833-11	METAL CHIP	10K	5%	1/10W
R188	1-216-864-11	METAL CHIP	0	5%	1/10W
R189	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R190	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R192	1-216-864-11	METAL CHIP	0	5%	1/10W
R193	1-220-810-11	RES-CHIP	0.39	1%	1/2W
R194	1-216-864-11	METAL CHIP	0	5%	1/10W
R196	1-216-864-11	METAL CHIP	0	5%	1/10W
R198	1-216-864-11	METAL CHIP	0	5%	1/10W
R200	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R201	1-216-801-11	METAL CHIP	22	5%	1/10W
R202	1-216-817-11	METAL CHIP	470	5%	1/10W
R203	1-216-801-11	METAL CHIP	22	5%	1/10W
R204	1-216-801-11	METAL CHIP	22	5%	1/10W
R205	1-216-801-11	METAL CHIP	22	5%	1/10W
R206	1-216-864-11	METAL CHIP	0	5%	1/10W
R207	1-216-813-11	METAL CHIP	220	5%	1/10W
R208	1-216-864-11	METAL CHIP	0	5%	1/10W
R209	1-216-801-11	METAL CHIP	22	5%	1/10W
R210	1-216-864-11	METAL CHIP	0	5%	1/10W
R211	1-216-801-11	METAL CHIP	22	5%	1/10W
R213	1-216-817-11	METAL CHIP	470	5%	1/10W
R215	1-216-864-11	METAL CHIP	0	5%	1/10W
R216	1-218-875-11	METAL CHIP	15K	0.5%	1/10W

Ref. No.	Part No.	Description			Remarks
R217	1-216-864-11	METAL CHIP	0	5%	1/10W
R218	1-216-801-11	METAL CHIP	22	5%	1/10W
R219	1-216-801-11	METAL CHIP	22	5%	1/10W
R220	1-216-801-11	METAL CHIP	22	5%	1/10W
R221	1-216-801-11	METAL CHIP	22	5%	1/10W
R222	1-216-801-11	METAL CHIP	22	5%	1/10W
R223	1-216-801-11	METAL CHIP	22	5%	1/10W
R224	1-216-801-11	METAL CHIP	22	5%	1/10W
R225	1-216-833-11	METAL CHIP	10K	5%	1/10W
R226	1-216-864-11	METAL CHIP	0	5%	1/10W
R228	1-216-833-11	METAL CHIP	10K	5%	1/10W
R229	1-216-864-11	METAL CHIP	0	5%	1/10W
R230	1-216-817-11	METAL CHIP	470	5%	1/10W
R231	1-216-809-11	METAL CHIP	100	5%	1/10W
R232	1-216-864-11	METAL CHIP	0	5%	1/10W
R241	1-216-809-11	METAL CHIP	100	5%	1/10W
R242	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R243	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R244	1-216-864-11	METAL CHIP	0	5%	1/10W
R245	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R246	1-216-833-11	METAL CHIP	10K	5%	1/10W
R248	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R250	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R251	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R253	1-216-864-11	METAL CHIP	0	5%	1/10W
R254	1-216-857-11	METAL CHIP	1M	5%	1/10W
R258	1-216-833-11	METAL CHIP	10K	5%	1/10W
R260	1-216-833-11	METAL CHIP	10K	5%	1/10W
R262	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R263	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R264	1-216-797-11	METAL CHIP	10	5%	1/10W
R265	1-218-833-11	METAL CHIP	270	0.5%	1/10W
R267	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R268	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R269	1-216-817-11	METAL CHIP	470	5%	1/10W
R270	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R271	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R274	1-216-833-11	METAL CHIP	10K	5%	1/10W
R276	1-218-843-11	METAL CHIP	680	0.5%	1/10W
R277	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R278	1-218-285-11	METAL CHIP	75	5%	1/10W
R281	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R283	1-216-809-11	METAL CHIP	100	5%	1/10W
R290	1-216-833-11	METAL CHIP	10K	5%	1/10W
R291	1-216-811-11	METAL CHIP	150	5%	1/10W
R300	1-216-833-11	METAL CHIP	10K	5%	1/10W
R301	1-216-845-11	METAL CHIP	100K	5%	1/10W
R302	1-216-845-11	METAL CHIP	100K	5%	1/10W
R303	1-216-833-11	METAL CHIP	10K	5%	1/10W
R304	1-216-833-11	METAL CHIP	10K	5%	1/10W
R305	1-216-864-11	METAL CHIP	0	5%	1/10W
R307	1-216-864-11	METAL CHIP	0	5%	1/10W
R320	1-216-864-11	METAL CHIP	0	5%	1/10W
R321	1-216-864-11	METAL CHIP	0	5%	1/10W
R322	1-216-864-11	METAL CHIP	0	5%	1/10W
R323	1-216-864-11	METAL CHIP	0	5%	1/10W
R324	1-216-864-11	METAL CHIP	0	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R325	1-216-864-11	METAL CHIP	0	5%	1/10W
R350	1-216-821-11	METAL CHIP	1K	5%	1/10W
R351	1-216-821-11	METAL CHIP	1K	5%	1/10W
R353	1-216-833-11	METAL CHIP	10K	5%	1/10W
R354	1-216-833-11	METAL CHIP	10K	5%	1/10W
R356	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R369	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R370	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R502	1-216-809-11	METAL CHIP	100	5%	1/10W
R503	1-216-809-11	METAL CHIP	100	5%	1/10W
R504	1-216-864-11	METAL CHIP	0	5%	1/10W
R505	1-216-841-11	METAL CHIP	47K	5%	1/10W
R506	1-216-864-11	METAL CHIP	0	5%	1/10W
R507	1-216-864-11	METAL CHIP	0	5%	1/10W
R508	1-216-864-11	METAL CHIP	0	5%	1/10W
R509	1-216-833-11	METAL CHIP	10K	5%	1/10W
R511	1-216-864-11	METAL CHIP	0	5%	1/10W
R513	1-216-864-11	METAL CHIP	0	5%	1/10W
R515	1-216-864-11	METAL CHIP	0	5%	1/10W
R519	1-216-864-11	METAL CHIP	0	5%	1/10W
R522	1-216-845-11	METAL CHIP	100K	5%	1/10W
R523	1-216-845-11	METAL CHIP	100K	5%	1/10W
R524	1-216-845-11	METAL CHIP	100K	5%	1/10W
R525	1-216-845-11	METAL CHIP	100K	5%	1/10W
R526	1-216-864-11	METAL CHIP	0	5%	1/10W
R527	1-216-864-11	METAL CHIP	0	5%	1/10W
R528	1-216-864-11	METAL CHIP	0	5%	1/10W
R529	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R530	1-216-864-11	METAL CHIP	0	5%	1/10W
R532	1-216-864-11	METAL CHIP	0	5%	1/10W
R533	1-216-864-11	METAL CHIP	0	5%	1/10W
R534	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R535	1-216-864-11	METAL CHIP	0	5%	1/10W
R536	1-216-864-11	METAL CHIP	0	5%	1/10W
R537	1-216-864-11	METAL CHIP	0	5%	1/10W
R538	1-216-864-11	METAL CHIP	0	5%	1/10W
R539	1-216-864-11	METAL CHIP	0	5%	1/10W
R540	1-216-833-11	METAL CHIP	10K	5%	1/10W
R542	1-216-833-11	METAL CHIP	10K	5%	1/10W
R543	1-216-833-11	METAL CHIP	10K	5%	1/10W
R544	1-216-813-11	METAL CHIP	220	5%	1/10W
R545	1-216-801-11	METAL CHIP	22	5%	1/10W
R546	1-216-864-11	METAL CHIP	0	5%	1/10W
R547	1-216-864-11	METAL CHIP	0	5%	1/10W
R548	1-216-813-11	METAL CHIP	220	5%	1/10W
R549	1-216-864-11	METAL CHIP	0	5%	1/10W
R550	1-216-864-11	METAL CHIP	0	5%	1/10W
R555	1-216-845-11	METAL CHIP	100K	5%	1/10W
R556	1-216-845-11	METAL CHIP	100K	5%	1/10W
		< COMPOSITION CIRCUIT BLOCK >			
RB201	1-233-810-21	RES, NETWORK 100K (3216)			
RB504	1-233-810-21	RES, NETWORK 100K (3216)			
RB505	1-233-810-21	RES, NETWORK 100K (3216)			
RB506	1-233-810-21	RES, NETWORK 100K (3216)			
RB508	1-233-810-21	RES, NETWORK 100K (3216)			
RB509	1-233-810-21	RES, NETWORK 100K (3216)			
RB510	1-233-810-21	RES, NETWORK 100K (3216)			
RB511	1-233-810-21	RES, NETWORK 100K (3216)			
RB512	1-233-810-21	RES, NETWORK 100K (3216)			
RB514	1-233-810-21	RES, NETWORK 100K (3216)			
RB515	1-233-810-21	RES, NETWORK 100K (3216)			
RB516	1-233-810-21	RES, NETWORK 100K (3216)			
RB517	1-233-810-21	RES, NETWORK 100K (3216)			
RB518	1-233-810-21	RES, NETWORK 100K (3216)			
RB519	1-233-810-21	RES, NETWORK 100K (3216)			
RB520	1-233-810-21	RES, NETWORK 100K (3216)			
RB521	1-233-810-21	RES, NETWORK 100K (3216)			
RB522	1-233-810-21	RES, NETWORK 100K (3216)			
		< SWITCH >			
S170	1-786-288-11	SWITCH, DETECTION (LOAD IN)			
S171	1-786-288-11	SWITCH, DETECTION (LOAD OUT)			
		< VIBRATOR >			
X201	1-795-519-11	VIBRATOR, CRYSTAL (33.8688MHz)			
X501	1-795-622-21	VIBRATOR, CERAMIC (20MHz)			
**********					
	1-675-729-11	CLAMP MOTOR BOARD			
		**********			
		< CAPACITOR >			
C701	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C702	1-126-964-11	ELECT	10uF	20.00%	50V
C706	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C711	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
		< CONNECTOR >			
* CN712	1-568-954-11	PIN, CONNECTOR 5P			
		< DIODE >			
D701	8-719-983-66	DIODE MTZJ-T-72-3.6B			
		< IC >			
IC701	8-759-633-65	IC M54641L			
		< RESISTOR >			
R701	1-249-411-11	CARBON	330	5%	1/4W
R702	1-249-401-11	CARBON	47	5%	1/4W F
**********					
	1-675-722-11	CONNECTOR BOARD			
		**********			
		< CONNECTOR >			
CN701	1-770-169-11	CONNECTOR, FFC/FPC 17P			
		< TRANSISTOR >			
Q701	8-729-029-66	TRANSISTOR	RT1N141S-TP		
		< RESISTOR >			
R707	1-249-424-11	CARBON	3.9K	5%	1/4W F
R708	1-249-417-11	CARBON	1K	5%	1/4W F
R709	1-249-429-11	CARBON	10K	5%	1/4W
**********					

DISP **HP**

Ref. No.	Part No.	Description			Remarks
	A-4732-814-A	DISP BOARD, COMPLETE			
		**********			
	4-949-935-41	CUSHION (FL)			
*	4-996-686-03	HOLDER (FL)			
		< CAPACITOR >			
C742	1-124-584-00	ELECT	100uF	20%	10V
C743	1-164-159-11	CERAMIC	0.1uF		50V
C751	1-124-261-00	ELECT	10uF	20%	50V
C753	1-124-261-00	ELECT	10uF	20%	50V
C760	1-124-261-00	ELECT	10uF	20%	50V
C761	1-162-294-31	CERAMIC	0.001uF	10%	50V
C762	1-162-294-31	CERAMIC	0.001uF	10%	50V
C763	1-164-159-11	CERAMIC	0.1uF		50V
C764	1-124-261-00	ELECT	10uF	20%	50V
C765	1-164-159-11	CERAMIC	0.1uF		50V
C766	1-162-213-31	CERAMIC	39PF	5%	50V
C767	1-164-159-11	CERAMIC	0.1uF		50V
C768	1-162-294-31	CERAMIC	0.001uF	10%	50V
C769	1-162-294-31	CERAMIC	0.001uF	10%	50V
C770	1-162-294-31	CERAMIC	0.001uF	10%	50V
		< CONNECTOR >			
CN700	1-779-558-21	CONNECTOR,FFC (LIF (NON-ZIF)) 21P			
* CN710	1-695-823-11	CONNECTOR, BOARD TO BOARD 8P			
		< DIODE >			
D775	8-719-046-39	DIODE SEL5821A-TP15 (SBM)			
		< FILTER >			
FL750	1-518-898-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC760	8-759-680-17	IC MSM9201-04GS-K			
IC781	8-759-826-33	IC NJL73H400A (R)			
		< TRANSISTOR >			
Q761	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q762	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q775	8-729-900-80	TRANSISTOR	UN4211-TA		
		< RESISTOR >			
R700	1-249-409-11	CARBON	220	5%	1/4W F
R701	1-249-411-11	CARBON	330	5%	1/4W
R702	1-249-413-11	CARBON	470	5%	1/4W F
R703	1-249-415-11	CARBON	680	5%	1/4W F
R704	1-249-417-11	CARBON	1K	5%	1/4W F
R711	1-249-409-11	CARBON	220	5%	1/4W F
R712	1-249-411-11	CARBON	330	5%	1/4W
R713	1-249-413-11	CARBON	470	5%	1/4W F
R714	1-249-415-11	CARBON	680	5%	1/4W F
R715	1-249-417-11	CARBON	1K	5%	1/4W F
R716	1-249-419-11	CARBON	1.5K	5%	1/4W F
R717	1-249-421-11	CARBON	2.2K	5%	1/4W F
R718	1-249-425-11	CARBON	4.7K	5%	1/4W F
R719	1-249-429-11	CARBON	10K	5%	1/4W
R721	1-249-409-11	CARBON	220	5%	1/4W F
R722	1-249-411-11	CARBON	330	5%	1/4W
R723	1-249-413-11	CARBON	470	5%	1/4W F
R724	1-249-415-11	CARBON	680	5%	1/4W F
R741	1-247-807-31	CARBON	100	5%	1/4W
R742	1-249-401-11	CARBON	47	5%	1/4W F
R761	1-247-807-31	CARBON	100	5%	1/4W
R762	1-247-807-31	CARBON	100	5%	1/4W
R763	1-249-441-11	CARBON	100K	5%	1/4W
R764	1-249-441-11	CARBON	100K	5%	1/4W
R766	1-247-843-11	CARBON	3.3K	5%	1/4W
R767	1-247-807-31	CARBON	100	5%	1/4W
R768	1-247-807-31	CARBON	100	5%	1/4W
R769	1-247-807-31	CARBON	100	5%	1/4W
R770	1-247-807-31	CARBON	100	5%	1/4W
R775	1-247-807-31	CARBON	100	5%	1/4W
		< VARIABLE RESISTOR >			
RV780	1-223-673-11	RES, VAR, CARBON 10K (REC LEVEL)			
		< SWITCH >			
S700	1-762-875-21	SWITCH, KEYBOARD (ERASE)			
S701	1-762-875-21	SWITCH, KEYBOARD (FINALIZE)			
S702	1-762-875-21	SWITCH, KEYBOARD (INPUT)			
S703	1-762-875-21	SWITCH, KEYBOARD (SBM)			
S704	1-762-875-21	SWITCH, KEYBOARD (REC)			
S710	1-762-875-21	SWITCH, KEYBOARD (▷ (RCD))			
S711	1-762-875-21	SWITCH, KEYBOARD (❚❚ (RCD))			
S712	1-762-875-21	SWITCH, KEYBOARD (■ (RCD))			
S713	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE (RCD))			
S714	1-762-875-21	SWITCH, KEYBOARD (TIME (RCD))			
S715	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)			
S716	1-762-875-21	SWITCH, KEYBOARD (YES)			
S717	1-477-995-11	ENCODER, ROTARY (AMS (RCD))			
S718	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)			
S719	1-762-875-21	SWITCH, KEYBOARD (CLEAR)			
S720	1-762-875-21	SWITCH, KEYBOARD (OPEN/CLOSE(RCD))			
S721	1-762-875-21	SWITCH, KEYBOARD (NORMAL)			
S722	1-762-875-21	SWITCH, KEYBOARD (HIGHT)			
S723	1-477-995-11	ENCODER, ROTARY (AMS (CD))			
S724	1-762-875-21	SWITCH, KEYBOARD (ALBUM)			
**********					
	1-683-868-21	HP BOARD			
		*********			
		< CAPACITOR >			
C791	1-162-290-31	CERAMIC	470PF	10%	50V
C796	1-162-290-31	CERAMIC	470PF	10%	50V
		< JACK >			
J790	1-770-306-11	JACK (LARGE TYPE)(PHONES)			
		< CAPACITOR >			
L790	1-164-159-11	CERAMIC	0.1uF		50V

HP | **INIT/COUNT SW** | **IN SW** | **LED** | **LOAD MOTOR** | **MAIN**

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R791	1-249-393-11	CARBON	10	5%	1/4W F
R796	1-249-393-11	CARBON	10	5%	1/4W F
		< VARIABLE RESISTOR >			
RV790	1-225-741-11	RES, VAR, CARBON 20K/20K (PHONE LEVEL)			
**********					
	1-675-724-11	INIT/COUNT SW BOARD			
		**********			
		< SWITCH >			
S705	1-771-264-11	SWITCH, PUSH (DETECTION) (1 KEY) (INIT)			
S706	1-771-264-11	SWITCH, PUSH (DETECTION) (1 KEY) (COUNT)			
**********					
	1-675-723-11	IN SW BOARD			
		**********			
		< CONNECTOR >			
* CN710	1-568-941-11	PIN, CONNECTOR 3P			
		< SWITCH >			
S703	1-771-218-11	SWITCH, MICRO (MID IN)			
S704	1-771-218-11	SWITCH, MICRO (IN)			
**********					
	A-4732-812-A	LED BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C750	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C751	1-124-225-91	ELECT	1uF	20%	50V
C755	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
		< CONNECTOR >			
* CN780	1-695-822-11	CONNECTOR,BOARD TO BOARD 8P			
		< DIODE >			
D751	8-719-079-89	DIODE SML-020MDT-T86 (DISC 1)			
D752	8-719-079-89	DIODE SML-020MDT-T86 (DISC 2)			
D753	8-719-079-89	DIODE SML-020MDT-T86 (DISC 3)			
D754	8-719-079-89	DIODE SML-020MDT-T86 (DISC 4)			
D755	8-719-079-89	DIODE SML-020MDT-T86 (DISC 5)			
		< IC >			
IC750	6-704-046-01	IC BU2099FV			
		< TRANSISTOR >			
Q780	8-729-015-76	TRANSISTOR UN5211-TX			
		< RESISTOR >			
R701	1-216-813-11	METAL CHIP	220	5%	1/10W
R702	1-216-815-11	METAL CHIP	330	5%	1/10W
R703	1-216-817-11	METAL CHIP	470	5%	1/10W
R704	1-216-819-11	METAL CHIP	680	5%	1/10W
R705	1-216-821-11	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R706	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R707	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R708	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R709	1-216-833-11	METAL CHIP	10K	5%	1/10W
R760	1-216-801-11	METAL CHIP	22	5%	1/10W
R761	1-216-801-11	METAL CHIP	22	5%	1/10W
R780	1-216-833-11	METAL CHIP	10K	5%	1/10W
		< COMPOSITION CIRCUIT BLOCK >			
RB753	1-233-576-11	RES, CHIP NETWORK 100			
RB756	1-233-575-11	RES, CHIP NETWORK 22			
RB762	1-233-575-11	RES, CHIP NETWORK 22			
		< SWITCH >			
S700	1-762-875-21	SWITCH, KEYBOARD (DISC 1)			
S701	1-762-875-21	SWITCH, KEYBOARD (⏏)			
S702	1-762-875-21	SWITCH, KEYBOARD (DISC 2)			
S703	1-762-875-21	SWITCH, KEYBOARD (⏏)			
S704	1-762-875-21	SWITCH, KEYBOARD (DISC 3)			
S705	1-762-875-21	SWITCH, KEYBOARD (⏏)			
S706	1-762-875-21	SWITCH, KEYBOARD (DISC 4)			
S707	1-762-875-21	SWITCH, KEYBOARD (⏏)			
S708	1-762-875-21	SWITCH, KEYBOARD (DISC 5)			
S709	1-762-875-21	SWITCH, KEYBOARD (⏏)			
**********					
	1-675-728-11	LOAD MOTOR BOARD			
		**********			
		< CAPACITOR >			
C703	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C704	1-126-964-11	ELECT	10uF	20.00%	50V
C705	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C712	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
		< CONNECTOR >			
* CN713	1-568-954-11	PIN, CONNECTOR 5P			
		< DIODE >			
D702	8-719-109-85	DIODE MTZJ-T-72-5.1B			
		< IC >			
IC702	8-759-633-65	IC M54641L			
		< RESISTOR >			
R703	1-249-411-11	CARBON	330	5%	1/4W
R704	1-249-401-11	CARBON	47	5%	1/4W F
**********					
	A-4732-811-A	MAIN BOARD, COMPLETE			
		**********			
*	3-923-762-11	HOLDER (TR)			
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3			
		< CAPACITOR >			
C12	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C16	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C62	1-164-156-11	CERAMIC CHIP	0.1uF		25V

MAIN

Ref. No.	Part No.	Description			Remarks
C79	1-162-971-11	CERAMIC CHIP	0.001uF	10.00%	50V
C91	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C98	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C99	1-104-665-11	ELECT	100uF	20.00%	10V
C100	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C111	1-136-356-11	MYLAR	470PF	5.00%	50V
C112	1-128-551-11	ELECT	22uF	20.00%	25V
C113	1-128-551-11	ELECT	22uF	20.00%	25V
C118	1-128-551-11	ELECT	22uF	20.00%	25V
C170	1-128-551-11	ELECT	22uF	20.00%	25V
C173	1-128-551-11	ELECT	22uF	20.00%	25V
C174	1-136-356-11	MYLAR	470PF	5.00%	50V
C211	1-136-356-11	MYLAR	470PF	5.00%	50V
C212	1-128-551-11	ELECT	22uF	20.00%	25V
C213	1-128-551-11	ELECT	22uF	20.00%	25V
C218	1-128-551-11	ELECT	22uF	20.00%	25V
C270	1-128-551-11	ELECT	22uF	20.00%	25V
C273	1-128-551-11	ELECT	22uF	20.00%	25V
C274	1-136-356-11	MYLAR	470PF	5.00%	50V
C310	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C311	1-126-933-11	ELECT	100uF	20.00%	16V
C312	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C316	1-126-933-11	ELECT	100uF	20.00%	16V
C317	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C361	1-126-933-11	ELECT	100uF	20.00%	16V
C362	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C366	1-126-933-11	ELECT	100uF	20.00%	16V
C367	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C391	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C396	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C401	1-126-767-11	ELECT	1000uF	20.00%	16V
C403	1-126-767-11	ELECT	1000uF	20.00%	16V
C406	1-126-935-11	ELECT	470uF	20.00%	16V
C411	1-126-939-11	ELECT	10000uF	20.00%	16V
C412	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C413	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C414	1-126-926-11	ELECT	1000uF	20.00%	10V
C421	1-126-939-11	ELECT	10000uF	20.00%	16V
C422	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C423	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C424	1-126-926-11	ELECT	1000uF	20.00%	10V
C426	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C427	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C428	1-126-935-11	ELECT	470uF	20.00%	6.3V
C431	1-128-548-11	ELECT	4700uF	20.00%	25V
C432	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C433	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C434	1-126-926-11	ELECT	1000uF	20.00%	10V
C442	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C443	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C444	1-126-926-11	ELECT	1000uF	20.00%	10V
C451	1-128-548-11	ELECT	4700uF	20.00%	25V
C452	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C453	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C454	1-126-926-11	ELECT	1000uF	20.00%	10V
C460	1-128-576-11	ELECT	100uF	20.00%	63V
C463	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C465	1-126-967-11	ELECT	47uF	20.00%	50V
C471	1-126-964-11	ELECT	10uF	20.00%	50V
C472	1-126-967-11	ELECT	47uF	20.00%	50V
C476	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C480	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C481	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C500	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C503	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C504	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C505	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C517	1-104-665-11	ELECT	100uF	20.00%	10V
C518	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C519	1-104-665-11	ELECT	100uF	20.00%	10V
C520	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C530	1-104-665-11	ELECT	100uF	20.00%	10V
C531	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C534	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C535	1-104-665-11	ELECT	100uF	20.00%	10V
C536	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C539	1-104-665-11	ELECT	100uF	20.00%	10V
C541	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C550	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C555	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C600	1-126-963-11	ELECT	4.7uF	20.00%	50V
C611	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C613	1-216-864-11	METAL CHIP	0	5%	1/10W
C621	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C630	1-216-864-11	METAL CHIP	0	5%	1/10W
C631	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C650	1-104-665-11	ELECT	100uF	20.00%	10V
C651	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C661	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C664	1-164-156-11	CERAMIC CHIP	0.1uF		25V
⚠C900	1-113-920-11	CERAMIC	0.0022uF	20.00%	250V
⚠C901	1-113-920-11	CERAMIC	0.0022uF	20.00%	250V
		< CONNECTOR >			
CN1	1-784-367-11	CONNECTOR, FFC/FPC 8P			
CN630	1-784-370-21	CONNECTOR, FFC/FPC 11P			
CN640	1-784-376-11	CONNECTOR, FFC/FPC 17P			
* CN641	1-568-954-11	PIN, CONNECTOR 5P			
CN660	1-784-382-21	CONNECTOR, FFC/FPC 25P			
CN661	1-784-368-11	CONNECTOR, FFC/FPC 9P			
CN671	1-778-692-11	CONNECTOR, FFC/FPC 21P			
CN690	1-506-468-11	PIN, CONNECTOR 3P			
CN900	1-564-321-00	PIN, CONNECTOR 2P			
		< DIODE >			
D181	8-719-820-05	DIODE 1SS181-TE85L			
D310	8-719-988-61	DIODE 1SS355TE-17			
D311	8-719-801-78	DIODE 1SS184-TE85L			
D316	8-719-820-05	DIODE 1SS181-TE85L			
D400	8-719-421-18	DIODE MA8033-L-TX			
D401	6-500-522-21	DIODE 10EDB40-TB3			
D402	6-500-522-21	DIODE 10EDB40-TB3			

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Ref. No.	Part No.	Description			Remarks
D403	6-500-522-21	DIODE 10EDB40-TB3			
D404	6-500-522-21	DIODE 10EDB40-TB3			
D406	6-500-522-21	DIODE 10EDB40-TB3			
D407	6-500-522-21	DIODE 10EDB40-TB3			
D411	6-500-522-21	DIODE 10EDB40-TB3			
D412	6-500-522-21	DIODE 10EDB40-TB3			
D421	6-500-522-21	DIODE 10EDB40-TB3			
D422	6-500-522-21	DIODE 10EDB40-TB3			
D431	6-500-522-21	DIODE 10EDB40-TB3			
D432	6-500-522-21	DIODE 10EDB40-TB3			
D433	6-500-522-21	DIODE 10EDB40-TB3			
D434	6-500-522-21	DIODE 10EDB40-TB3			
D451	6-500-522-21	DIODE 10EDB40-TB3			
D452	6-500-522-21	DIODE 10EDB40-TB3			
D453	6-500-522-21	DIODE 10EDB40-TB3			
D454	6-500-522-21	DIODE 10EDB40-TB3			
D461	6-500-522-21	DIODE 10EDB40-TB3			
D462	8-719-422-64	DIODE MA8062-M-TX			
D471	8-719-988-61	DIODE 1SS355TE-17			
D472	8-719-988-61	DIODE 1SS355TE-17			
D473	8-719-988-61	DIODE 1SS355TE-17			
		< IC >			
IC1	6-803-241-01	IC M30624MWP-068FP			
IC100	8-759-643-31	IC BR24C02FV-WE2			
IC310	8-759-278-58	IC NJM4558V-TE2			
IC370	8-759-278-58	IC NJM4558V-TE2			
IC390	8-759-697-21	IC NJM4565V(TE2)			
IC410	8-759-039-69	IC uPC7805AHF			
IC420	8-759-039-69	IC uPC7805AHF			
IC426	8-759-445-59	IC BA033T			
IC430	8-759-231-55	IC TA7808S			
IC440	8-759-071-48	IC TA7807S			
IC450	8-759-231-55	IC TA7808S			
IC460	8-759-633-42	IC M5293L			
IC476	8-759-387-77	IC TC7WU04F-TE12L			
IC480	6-702-913-01	IC S-80929CNMC-G8ZT2G			
IC500	6-701-843-01	IC AK4584VQ			
IC610	6-600-013-01	IC TORX179L (OPTICAL IN)			
IC620	6-600-011-01	IC TOTX179L (OPTICAL OUT)			
IC650	8-759-548-95	IC SN74LV00APWR			
		< JACK >			
J310	1-784-429-11	JACK, PIN 4P (ANALOG IN,OUT)			
		< COIL >			
L390	1-216-295-91	SHORT CHIP	0		
L391	1-216-295-91	SHORT CHIP	0		
L517	1-216-295-91	SHORT CHIP	0		
L535	1-216-864-11	METAL CHIP	0	5%	1/10W
L539	1-216-295-91	SHORT CHIP	0		
L600	1-414-267-21	INDUCTOR	10uH		
L632	1-414-760-21	FERRITE	0uH		
L636	1-414-760-21	FERRITE	0uH		
L650	1-216-295-91	SHORT CHIP	0		
L652	1-414-760-21	FERRITE	0uH		
L656	1-414-760-21	FERRITE	0uH		

Ref. No.	Part No.	Description			Remarks
L659	1-414-760-21	FERRITE	0uH		
L661	1-216-864-11	METAL CHIP	0	5%	1/10W
L662	1-216-295-91	SHORT CHIP	0		
L665	1-216-295-91	SHORT CHIP	0		
		< LINE FILTER >			
⚠LF900	1-419-625-11	COIL, LINE FILTER			
		< TRANSISTOR >			
Q181	8-729-046-97	TRANSISTOR 2SD1938 (F) -T (TX). SO			
Q191	8-729-424-67	TRANSISTOR UN2216-TX			
Q281	8-729-046-97	TRANSISTOR 2SD1938 (F) -T (TX). SO			
Q291	8-729-424-67	TRANSISTOR UN2216-TX			
Q310	8-729-922-37	TRANSISTOR 2SD2144S-TP-UVW			
Q380	8-729-015-74	TRANSISTOR UN5111-TX			
		< RESISTOR >			
R4	1-216-809-11	METAL CHIP	100	5%	1/10W
R5	1-216-833-11	METAL CHIP	10K	5%	1/10W
R9	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R10	1-216-833-11	METAL CHIP	10K	5%	1/10W
R17	1-216-845-11	METAL CHIP	100K	5%	1/10W
R18	1-216-833-11	METAL CHIP	10K	5%	1/10W
R20	1-216-833-11	METAL CHIP	10K	5%	1/10W
R24	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R26	1-216-847-11	METAL CHIP	150K	5%	1/10W
R28	1-216-843-11	METAL CHIP	68K	5%	1/10W
R29	1-216-833-11	METAL CHIP	10K	5%	1/10W
R30	1-216-833-11	METAL CHIP	10K	5%	1/10W
R32	1-216-833-11	METAL CHIP	10K	5%	1/10W
R34	1-216-833-11	METAL CHIP	10K	5%	1/10W
R41	1-216-864-11	METAL CHIP	0	5%	1/10W
R42	1-216-833-11	METAL CHIP	10K	5%	1/10W
R43	1-216-833-11	METAL CHIP	10K	5%	1/10W
R46	1-216-864-11	METAL CHIP	0	5%	1/10W
R48	1-216-833-11	METAL CHIP	10K	5%	1/10W
R50	1-216-833-11	METAL CHIP	10K	5%	1/10W
R59	1-216-833-11	METAL CHIP	10K	5%	1/10W
R60	1-216-833-11	METAL CHIP	10K	5%	1/10W
R67	1-216-833-11	METAL CHIP	10K	5%	1/10W
R76	1-216-845-11	METAL CHIP	100K	5%	1/10W
R77	1-216-833-11	METAL CHIP	10K	5%	1/10W
R78	1-216-833-11	METAL CHIP	10K	5%	1/10W
R80	1-216-833-11	METAL CHIP	10K	5%	1/10W
R81	1-216-845-11	METAL CHIP	100K	5%	1/10W
R85	1-216-833-11	METAL CHIP	10K	5%	1/10W
R89	1-216-835-11	METAL CHIP	15K	5%	1/10W
R91	1-216-809-11	METAL CHIP	100	5%	1/10W
R107	1-216-833-11	METAL CHIP	10K	5%	1/10W
R111	1-216-839-11	METAL CHIP	33K	5%	1/10W
R112	1-216-837-11	METAL CHIP	22K	5%	1/10W
R113	1-216-849-11	METAL CHIP	220K	5%	1/10W
R115	1-216-805-11	METAL CHIP	47	5%	1/10W

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MAIN **OUT SW** **POWER**

Ref. No.	Part No.	Description			Remarks
R170	1-216-845-11	METAL CHIP	100K	5%	1/10W
R171	1-216-864-11	METAL CHIP	0	5%	1/10W
R172	1-216-864-11	METAL CHIP	0	5%	1/10W
R173	1-216-833-11	METAL CHIP	10K	5%	1/10W
R174	1-216-833-11	METAL CHIP	10K	5%	1/10W
R175	1-216-845-11	METAL CHIP	100K	5%	1/10W
R176	1-216-817-11	METAL CHIP	470	5%	1/10W
R177	1-216-817-11	METAL CHIP	470	5%	1/10W
R181	1-216-833-11	METAL CHIP	10K	5%	1/10W
R191	1-216-805-11	METAL CHIP	47	5%	1/10W
R192	1-216-805-11	METAL CHIP	47	5%	1/10W
R193	1-216-864-11	METAL CHIP	0	5%	1/10W
R211	1-216-839-11	METAL CHIP	33K	5%	1/10W
R212	1-216-837-11	METAL CHIP	22K	5%	1/10W
R213	1-216-849-11	METAL CHIP	220K	5%	1/10W
R215	1-216-805-11	METAL CHIP	47	5%	1/10W
R270	1-216-845-11	METAL CHIP	100K	5%	1/10W
R271	1-216-864-11	METAL CHIP	0	5%	1/10W
R272	1-216-864-11	METAL CHIP	0	5%	1/10W
R273	1-216-833-11	METAL CHIP	10K	5%	1/10W
R274	1-216-833-11	METAL CHIP	10K	5%	1/10W
R275	1-216-845-11	METAL CHIP	100K	5%	1/10W
R276	1-216-817-11	METAL CHIP	470	5%	1/10W
R277	1-216-817-11	METAL CHIP	470	5%	1/10W
R281	1-216-833-11	METAL CHIP	10K	5%	1/10W
R291	1-216-805-11	METAL CHIP	47	5%	1/10W
R292	1-216-805-11	METAL CHIP	47	5%	1/10W
R293	1-216-864-11	METAL CHIP	0	5%	1/10W
R310	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R311	1-216-841-11	METAL CHIP	47K	5%	1/10W
R380	1-216-845-11	METAL CHIP	100K	5%	1/10W
R381	1-216-847-11	METAL CHIP	150K	5%	1/10W
⚠R401	1-219-786-11	FUSIBLE	22	5%	1/4W
⚠R403	1-219-786-11	FUSIBLE	22	5%	1/4W
R406	1-216-821-11	METAL CHIP	1K	5%	1/10W
R441	1-216-864-11	METAL CHIP	0	5%	1/10W
R461	1-216-837-11	METAL CHIP	22K	5%	1/10W
R462	1-216-845-11	METAL CHIP	100K	5%	1/10W
R463	1-216-813-11	METAL CHIP	220	5%	1/10W
R464	1-216-813-11	METAL CHIP	220	5%	1/10W
R470	1-216-809-11	METAL CHIP	100	5%	1/10W
R471	1-216-864-11	METAL CHIP	0	5%	1/10W
R472	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R473	1-216-815-11	METAL CHIP	330	5%	1/10W
R474	1-216-833-11	METAL CHIP	10K	5%	1/10W
R475	1-216-843-11	METAL CHIP	68K	5%	1/10W
R476	1-216-853-11	METAL CHIP	470K	5%	1/10W
R477	1-216-821-11	METAL CHIP	1K	5%	1/10W
R480	1-216-841-11	METAL CHIP	47K	5%	1/10W
R504	1-216-864-11	METAL CHIP	0	5%	1/10W
R506	1-216-809-11	METAL CHIP	100	5%	1/10W
R507	1-216-809-11	METAL CHIP	100	5%	1/10W
R513	1-216-864-11	METAL CHIP	0	5%	1/10W
R514	1-216-864-11	METAL CHIP	0	5%	1/10W
R516	1-216-864-11	METAL CHIP	0	5%	1/10W
R539	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R540	1-216-834-11	METAL CHIP	12K	5%	1/10W
R611	1-216-817-11	METAL CHIP	470	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R632	1-216-813-11	METAL CHIP	220	5%	1/10W
R636	1-216-813-11	METAL CHIP	220	5%	1/10W
R651	1-216-845-11	METAL CHIP	100K	5%	1/10W
R652	1-216-809-11	METAL CHIP	100	5%	1/10W
R653	1-216-845-11	METAL CHIP	100K	5%	1/10W
R656	1-216-813-11	METAL CHIP	220	5%	1/10W
R658	1-216-845-11	METAL CHIP	100K	5%	1/10W
R659	1-216-809-11	METAL CHIP	100	5%	1/10W
R1090	1-216-864-11	METAL CHIP	0	5%	1/10W
R1092	1-216-864-11	METAL CHIP	0	5%	1/10W
		< COMPOSITION CIRCUIT BLOCK >			
RB51	1-236-908-11	RES, CHIP NETWORK 10K (3216)			
RB55	1-236-908-11	RES, CHIP NETWORK 10K (3216)			
RB72	1-236-908-11	RES, CHIP NETWORK 10K (3216)			
RB82	1-236-908-11	RES, CHIP NETWORK 10K (3216)			
RB86	1-236-908-11	RES, CHIP NETWORK 10K (3216)			
RB93	1-233-418-11	RES, CHIP NETWORK 3.3K (3216)			
RB509	1-233-576-11	RES, CHIP NETWORK 100			
		< RELAY >			
RY310	1-755-359-11	RELAY			
		< VIBRATOR >			
X15	1-795-058-21	VIBRATOR, CERAMIC (5MHz)			
**********					
	1-675-725-11	OUT SW BOARD			
		**********			
		< CONNECTOR >			
* CN709	1-568-943-11	PIN, CONNECTOR 5P			
		< SWITCH >			
S701	1-771-218-11	SWITCH, MICRO (MID OUT)			
S702	1-771-218-11	SWITCH, MICRO (LID)			
S708	1-771-218-11	SWITCH, MICRO (OUT)			
**********					
	1-683-869-21	POWER BOARD			
		**********			
		< CAPACITOR >			
⚠C921	1-113-920-11	CERAMIC	0.0022uF	20.00% 250V	
		< CONNECTOR >			
* CN920	1-580-230-31	PIN, CONNECTOR (PC BOARD) 2P			
		< SWITCH >			
⚠S921	1-572-267-51	SWITCH, PUSH (AC POWER)(1 KEY)(POWER)			
**********					

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SENSOR | **SENSOR 2** | **SW**

Ref. No.	Part No.	Description	Remarks
	1-675-726-11	SENSOR BOARD	
		**********	
	4-964-461-02	HOLDER (SENSOR)	
		< CONNECTOR >	
CN708	1-506-481-11	PIN, CONNECTOR 2P	
		< DIODE >	
D704	8-719-055-84	DIODE GL528VS1 (DISC IN DET SENSOR)	
		< RESISTOR >	
R711	1-249-415-11	CARBON 680 5% 1/4W	F
**********			
	1-675-727-11	SENSOR 2 BOARD	
		**********	
		< TRANSISTOR >	
Q703	8-729-921-53	PHOTO TRANSISTOR PT483F1 (DISC IN DET SENSOR)	
**********			
	1-683-867-21	SW BOARD	
		*********	
		< RESISTOR >	
R725	1-249-417-11	CARBON 1K 5% 1/4W	F
R726	1-249-419-11	CARBON 1.5K 5% 1/4W	F
R727	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R728	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R729	1-249-429-11	CARBON 10K 5% 1/4W	
		< SWITCH >	
S725	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE (CD))	
S726	1-762-875-21	SWITCH, KEYBOARD (TIME (CD))	
S727	1-762-875-21	SWITCH, KEYBOARD (▷ (CD))	
S728	1-762-875-21	SWITCH, KEYBOARD (▮▮ (CD))	
S729	1-762-875-21	SWITCH, KEYBOARD (■ (CD))	
**********			

Ref. No.	Part No.	Description	Remarks
		MISCELLANEOUS	
		**********	
⚠5	1-783-531-42	CORD, POWER	
65	1-823-923-11	WIRE (FLAT TYPE) (21 CORE)	
107	1-823-925-11	WIRE(FLAT TYPE) (17CORE)	
109	1-782-881-11	WIRE(FLAT TYPE) (25CORE)	
110	1-823-922-11	WIRE(FLAT TYPE) (11CORE)	
111	1-782-864-11	WIRE (FLAT TYPE) (9 CORE)	
552	1-782-817-11	WIRE (FLAT TYPE) (16 CORE)	
⚠553	A-4735-885-A	BU-30B ASSY	
601	1-823-651-11	CABLE, FLEXIBLE FLAT (32 CORE)	
⚠603	8-583-104-01	OPTICAL PICK-UP (KRM-220CAA)	
* 609	1-452-958-11	MAGNET (CHUCKING)	
M201	A-4735-557-A	MOTOR ASSY (LOADING)	
M701	1-541-632-12	MOTOR, DC (ELEVATOR)	
M702	1-541-632-12	MOTOR, DC (LOADING)	
S707	1-418-045-01	ENCODER, ROTARY	
⚠T900	1-439-732-11	TRANSFORMER, POWER	
**********			
		ACCESSORIES	
		**********	
	1-477-901-11	COMMANDER, STANDARD (RM-R52)	
	1-776-263-12	CORD, CONNECTION	
	1-790-735-12	CORD, CONNECTION	
	4-228-696-01	BATTERY,COVER (FOR RM-R52)	
	4-246-076-11	MANUAL, INSTRUCTION (ENGLISH)	
	4-246-076-21	MANUAL, INSTRUCTION (FRENCH) (CND)	

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REVISION HISTORY

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Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2003.06	New
1.1	2003.12	Correction of the file name for Test Program (SPM-03123) Correction of Part No. for JIG cables (SPM-03127)
1.2	2004.08	Addition of Part No. for INSULATOR (MAIN) (SPM-04090)